

# Diving Incident Report

**2018** new format

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**The British Sub-Aqua Club**



## New Report Format for 2018

This year the British Sub-Aqua Club moved to analysing the data held in the Incident database by calendar year; the data are therefore presented in this report from 1<sup>st</sup> January 2018 to 31<sup>st</sup> December 2018. This change enables a more thorough analysis of the data prior to presenting the outcomes of the report in October of the following year. Previously the data had to be analysed and reported on within 3 weeks of closing the database due to the proximity of the Diving Conference. The data are now more complete in the report because sufficient time has elapsed since the end of the year for divers to report all incidents which happened in that incident year. As a result of this move this new format report for 2018 includes cases already reported in the Incident Report 2018, for January to September 2018, and now also includes the final three months for 2018. All the analysis of historical data has been reconfigured to present calendar year data.

This year we examine some long-term trends and give some positive messages about improving numbers of incidents involving fast ascents and decompression illness. In addition, we present for the first time data on the location of the diving incidents in the UK and where the rescue services have been involved in the recovery of divers after an incident.

The majority of information contained within this report is also shown in graphical form. Please note that all data information is produced from UK data only and does not include overseas Incidents unless noted as 'all Incidents'.

The contents of this report are split into an overview of the year, and then the details of eight incident categories plus some historical analyses. Within each category the incidents are listed in the order of their occurrence, not necessarily that of Incident Reference.

They are laid out in the following form:

MONTH/YEAR OF INCIDENT	INCIDENT REF.
Brief Narrative of Incident	

The nature of many diving incidents is such that there is usually more than one cause or effect. Where this is the case the incident has been classified under the more appropriate cause or effect. For instance, an incident involving a fast ascent, causing decompression illness, will be classified under 'Decompression Incidents'.

Please browse through the details in this report and use the synopses to learn. The individuals who have provided this information have had the courage and generosity to record their experiences for publication so that we can use this information to avoid similar problems.

Finally, if you are unfortunate enough to have an incident please help us maintain the most comprehensive recreational diving incident reporting system in the world by reporting it using our Incident Report form, available via the BSAC website or from BSAC HQ. As always, your anonymity is assured, great care is taken to preserve the confidentiality of any personal information recorded in BSAC Incident Report database.

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### **Acknowledgements**

Data for this report are collected from many different sources. We would like to extend our thanks and appreciation to the following for their assistance in its production and in ensuring its completeness:

- Maritime & Coastguard Agency
- MOD Superintendent of Diving
- PADI Europe, Middle East and Africa
- Royal Society for the Prevention of Accidents
- Scottish Sub-Aqua Club
- Sub-Aqua Association
- CFT – Coomhairle Fo-Thuinn – Irish Underwater Council
- Lizzie Bird for data input
- Dr. Yvonne Couch for proof reading this report
- and, in particular, all of those divers and other sources who have taken the trouble to complete incident reports and share their learning experience with others

Cover photograph by Simon Rogerson

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## Analysis of the Incident Database

As part of its role as National Governing Body for the sport in the UK the BSAC reports annually on the diving incidents in the UK. BSAC has been assembling data on recreational diving incidents for over 50 years. The majority of the incidents are reported through the Incident Reporting forms which are provided by all the diving agencies in the UK and Eire. We are also extremely grateful for the very valuable contributions to these data supplied by the Maritime & Coastguard Agency, the RNLI, MOD Superintendent of Defence Diving, PADI Europe, Middle East and Africa and Royal Society for the Prevention of Accidents.

The BSAC incident report is intended to help support diving agencies and rescue services in providing information to help inform strategic decisions. When interpreting the BSAC incident report it is important to understand the parameters under which the report is prepared. BSAC does not report on incidents which are wholly commercial in nature such as incidents involving professional scallop fishermen or operational work dives in harbours. It does however include all recreational instruction dives even when commercial in nature.

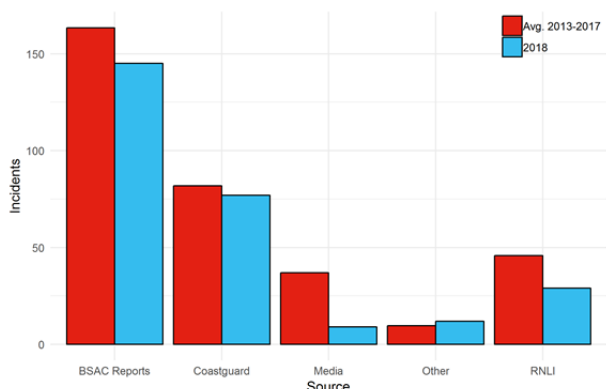


Figure 1. The source of reports contributing to the BSAC incident analysis

The data, unless otherwise stated, are for UK based diving involving all diving affiliations and not just BSAC. We are also receiving reports of incidents from the CFT (Eire-based diving) and when we have sufficient consecutive years of data we will incorporate these data into the analyses. And lastly, the new reporting year structure from 1<sup>st</sup> January to 31<sup>st</sup> December enables us to have greater confidence that the data set is complete for the reported year.

In the calendar year of 2018 we have recorded 242 incidents (Figure 2). This number is consistent with the number of incidents reported over the last five years and represents a plateauing in the level of reports.

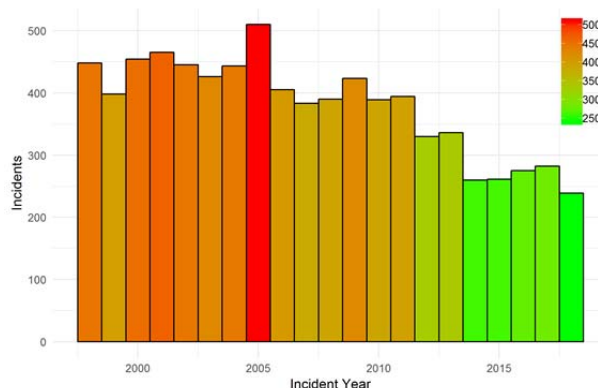


Figure 2. Total number of UK and Overseas reported incidents

The average number of incidents in the last five years follows a normal distribution across the calendar year with a peak of incidents coinciding with presumed peak in diving activity in July and August (Figure 3). In 2018, there was an unusually low number of incidents in March, probably due to the 'beast from the east', an extreme weather system which occurred in the UK from the 24<sup>th</sup> February to the 19<sup>th</sup> March when divers were unable to travel to diving venues due to snow and ice.

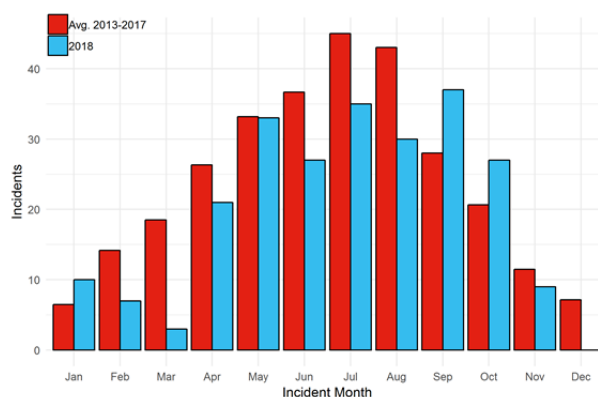


Figure 3. Number of incidents occurring in each month of the calendar year

### Incidents by Category

The incident database assigns all incidents into one of eight major categories, and Figure 4 shows the allocation of the 2018 incidents into these categories.

The allocation to a category is based upon the most serious attributable factor reported. Unfortunately, due to insufficient detail it is not always possible to allocate every incident to an accurate attributable factor. In 2018, there were fewer DCI incidents and fewer ascent related incidents than the average number of incidents reported for these categories over the last 5 years. The ascent category involves incidents where divers have made an abnormal ascent but avoided DCI or other injury.

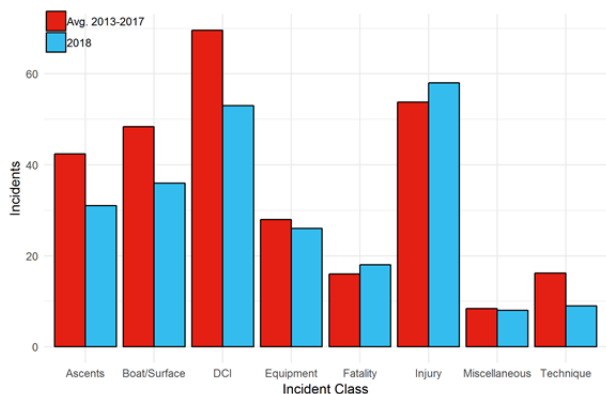


Figure 4. Reported incidents by category

The largest category is 'Injury' (which includes undefined illnesses) with 59 incidents reported. The bulk of this category is thought to be cases of DCI. Unfortunately, it is often not possible to distinguish cases of DCI from other diver ailments due to insufficient information being available. Incidents involving 'Boating and Surface' events had been falling progressively since the late 90s. This year the number of boating incidents is again down with respect to the last five years.

The last category to be mentioned specifically is 'Fatalities' and although the numbers are relatively small it is, of course, the most serious. This year unfortunately saw 17 diver fatalities; more analysis on this incident category is given later in the report.

**Incident Depths**

The maximum depth of the dive during which incidents took place, categorised into depth range groupings, is shown in Figure 5.

The pattern of the maximum depth of a dive on which an incident was recorded or that gave rise to an incident is probably a reflection of the amount of diving that takes place in these depth ranges. Where the depth of the dive on which incidents have occurred is known, we are seeing a shift in the distribution of dives towards deeper depths. (Figure 6).

The likelihood of an incident occurring as a result of diving to deeper depths is increased due to decompression illness, nitrogen narcosis, gas consumption and, in the UK, reduced light or visibility. In addition, incidents involving deeper dives are often more problematic due to the likelihood of serious DCI or unfortunately, unsuccessful rescue. The recommended limit for divers trained to Sports Diver standard is 35m and then only when they have received appropriate training for diving at this depth. BSAC recommends that helium mixtures should be considered as an option for depths deeper than 40m and that mixed gas diving should be to a maximum depth of 100m. Mixed gas dives should only be conducted when the diver holds a recognised qualification to conduct such dives.

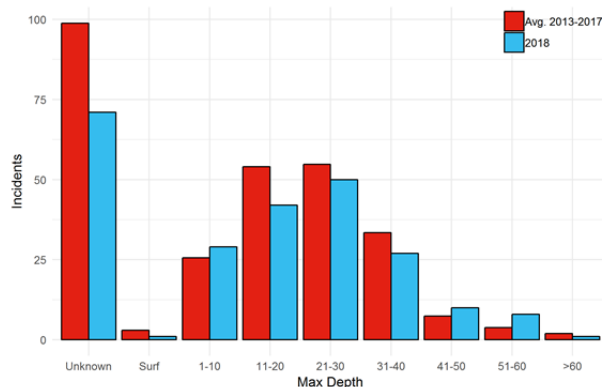


Figure 5. Maximum dive depth (m) in which incident occurred

Incidents do not always occur at the deepest point of the dive. Figure 6 shows the depths at which incidents started.

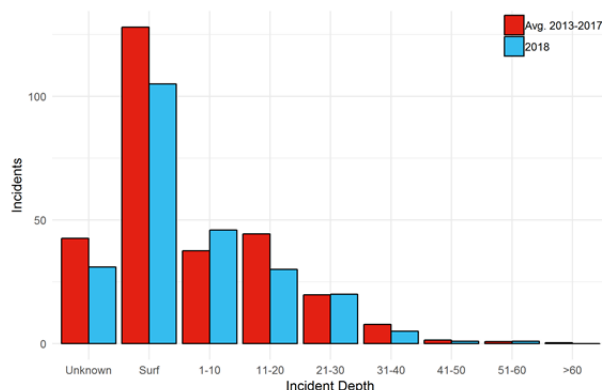


Figure 6. Depth (m) at which incident started

The data shown in Figure 6 reflect the situation that many incidents start during the ascent or at the surface. A significant proportion of these are the DCI cases where, almost always, symptoms present when the casualty is out of the water. Other surface incidents involve boats and boating incidents and divers who are lost but on the surface. The depth at which the in-water incidents began in 2018 is not inconsistent with the average of the previous 5 years but could possibly have shifted slightly shallower; we will monitor this movement in the future.

**Diver Qualification**

Figures 7 & 8 show the qualification of those BSAC members who were involved in reported incidents. When interpreting these graphs, it is important to acknowledge that the data gathers not only those who were subjects of the incident but also those involved in the rescue. Figure 7 looks at the diver qualification.

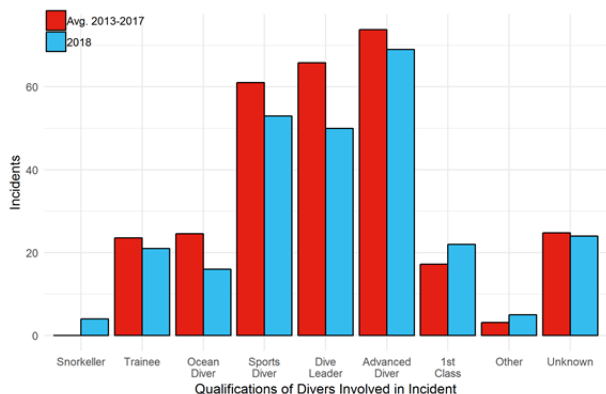


Figure 7. Qualification of divers involved in reported incidents

These data are in line with the normal pattern of previous years and are thought to reflect the number of active divers in these qualification grades). Figure 8 shows an analysis of incident by instructor qualification and again it is consistent with previous years.

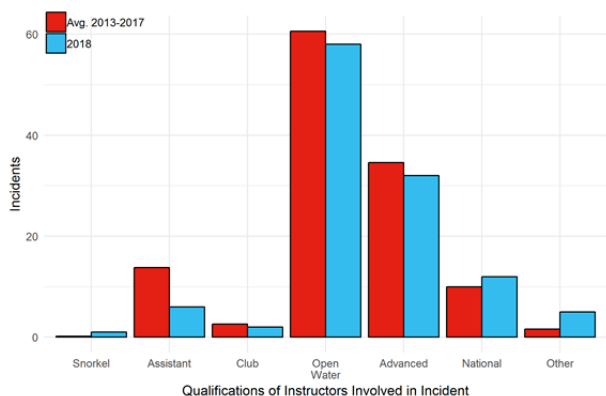


Figure 8. Qualification of instructors Involved In incidents

The involvement of each grade of instructor in incidents is probably a reflection of both the number of instructors with that qualification and the activity levels of these instructors. To reassure readers, the unusual number of incidents involving National Instructors (the highest award in BSAC) reflects the instances of the breakdown of RHIBs used on National events and the involvement of National Instructors in rescues rather than National Instructors having diving accidents.

**Divers' Use of Emergency Services**

Normally the divers' use of the emergency services shows a monthly distribution aligned to the distribution of all incidents, and is normally correlated with the number of dives that are taking place. However, this year in spring the number of incidents reported involving the Coastguard, the RNLI and helicopters is noticeably down (Figures 9, 10 and 11) but in contrast, the number of overall incidents reported is comparable with the last five years. This difference was investigated and can be explained by the fact that, in May, a significant proportion of the incidents reported were resolved without the activity of the rescue services.

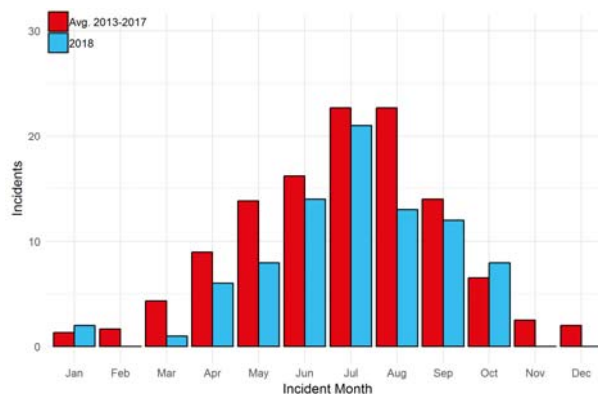


Figure 9. Incidents involving the UK Coastguard Agency in each month of the incident year

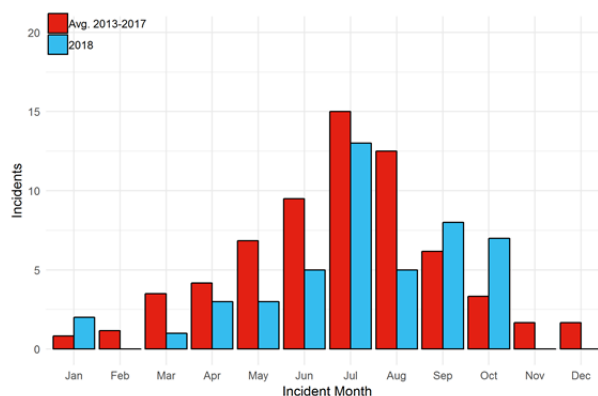


Figure 10. Divers' Use of RNLI facilities in each month of the incident year

In 2018, 44 incidents involved the use of helicopters, which is much lower than the average of 63.5 incidents over previous years. The decrease in helicopter use perhaps reflects the relatively low numbers of DCI cases reported in 2018.

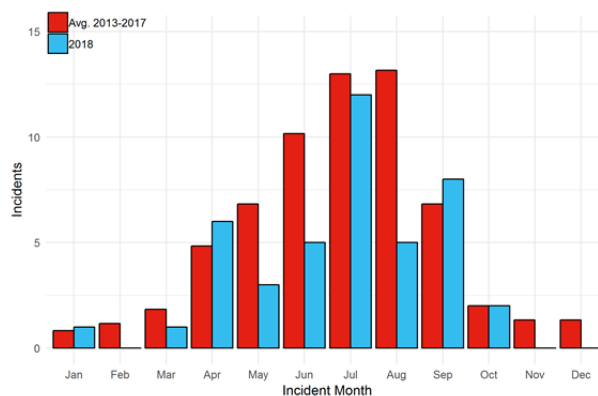


Figure 11. Divers' Use of SAR Helicopters in each month of the incident year

### Fatalities

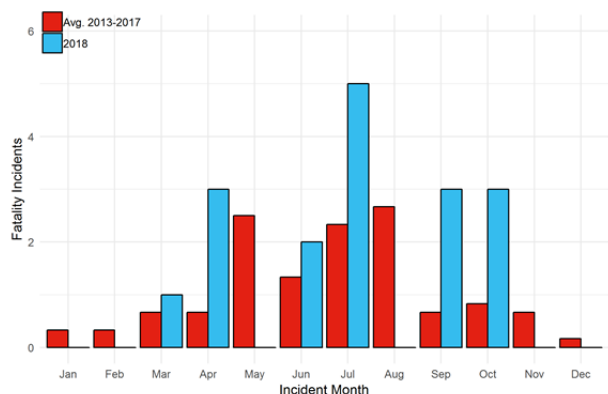


Figure 12. Fatalities in 2018 by calendar month compared to previous 5 years

17 fatal incidents occurred in the UK during the 2018 incident year. A feature of the fatalities in diving is that in a proportion of incidents the difference between an incident resulting in a fatality or a successful rescue is a consequence of a number of factors which come into play once an incident begins. Later in this report, we analyse the number of incidents in which rescue and recovery techniques have resulted in a successful outcome.

Eight of the 2018 fatalities were BSAC members. The previous ten-year average for BSAC fatalities in the UK is 7.5 fatalities per year. Nine of the 2018 fatalities were non-BSAC members. The previous ten-year average for this group is 8.5. Key factors associated with the 2018 fatalities can be summarised as follows: -

- The fatalities in 2018 involved divers with an average age of 56 (in one case the diver's age is unknown); three of these divers were in their 70s. This continues the previously identified trend of the fatalities occurring in an aging population of divers.
- Fourteen of these cases involved the casualty falling unconscious under or in the water. In all incidents, where a casualty falls unconscious in the water, the rescue becomes much more problematic.
- Three of these fatalities have been confirmed as having a significant pre-existing medical condition and in a further five there are indications that this is probably the case.
- Notably, in the view of the Authors, there seem to be indicators that immersion pulmonary oedema (IPO) may be a contributory factor in up to seven of these fatalities.
- In nine of the fatalities the divers either began their dive alone (5 cases) or became separated (4 cases).
- Four cases involved divers diving in a group of three or more and in two of these cases there was a subsequent separation of the casualty. Diving in groups of three (or more) brings additional complexity to a dive and can generate problems that don't exist with pair diving. BSAC recognises that, at times, it is necessary to dive in a group of three.

Often multiple causes are involved in an incident. There is often insufficient information available to be clear about the exact chain of events and specific

root causes. Often new information comes to light (from coroners' inquests for example) after the publication of this annual report. Such information is added to the incident database for future research purposes.

### Long term trends in the classes of incident

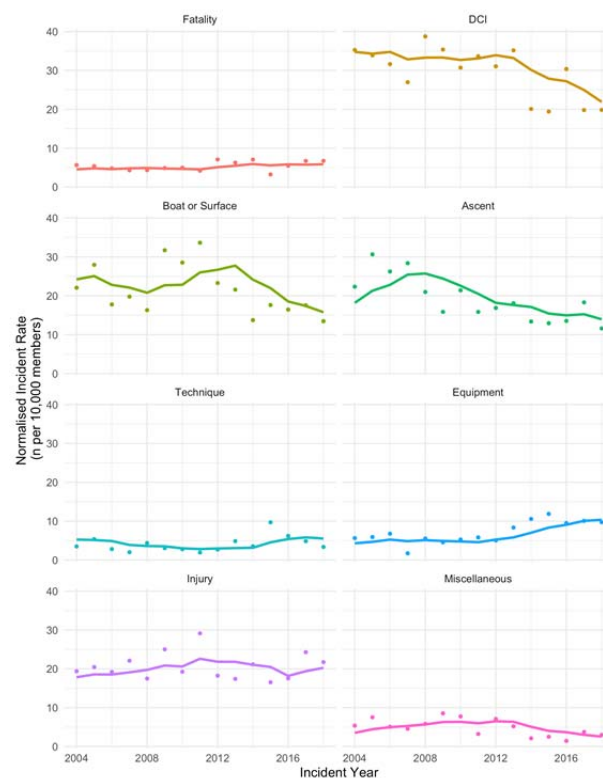


Figure 13. Incident rates by incident class using BSAC membership as a proxy for estimated participation in the sport. Trendlines are a 5 year rolling average.

One of the challenges in analysing the data held within the BSAC database is understanding long term trends against a background of a reduction in participation in the sport and a reduction in the number of incident reports. This year we conducted analysis of the data using BSAC membership numbers as a proxy for the level of diving taking place in the UK and then analysed the data for long term trends from 1999 using a 5-year rolling average. Figure 13 shows that the incidence of fatalities has remained relatively stable over the analysis period. The graphs highlight the variability behind the data, however it can be concluded that there is a downward trend over time of the incidence of decompression illness, ascent related events, and boating and surface incidents.

### Decompression Incidents

This analysis technique allows us to probe the data further to try to identify the factors that are involved in decompression incidents. We know that we do not capture all of the DCI related incidents but the sample that is captured in this report is sufficiently large to develop a good understanding of the underlying causal factors. Figure 14a shows that over time the incidence of decompression illness is falling even when accounting for reduced participation in the sport. Figure 14b shows the relative importance of some causal factors (where they



are identified) as a proportion of the total DCI incidents. These data are highly variable, however it can be seen that diving below 30m a rapid ascent and repeat diving are factors in 30 to 40% of DCI incidents and missed stops a factor in 20% of incidents. Additionally, there may be indications that repeat diving and dives deeper than 30 metres are increasing factors in DCI.

In 32% of all of the DCI reports there is no record of any of these known causal factors (this may mean that the factor was not present or that the factor was not recorded) and in 11% all four causal factors were present. The underlying message is that a diver presenting with symptoms of DCI should be treated even if no causal factor is presented.

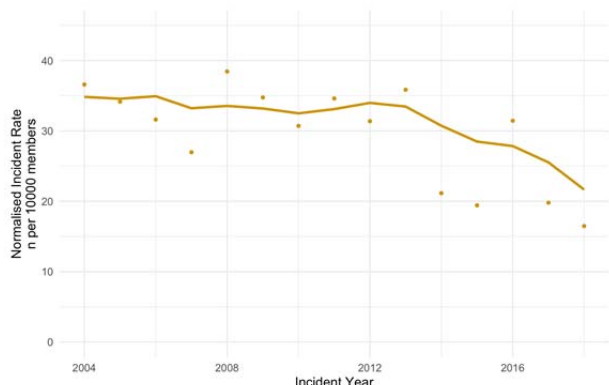


Figure 14a. Incidents of decompression illness adjusted using membership as a proxy for diving activity in the UK. Trendlines are a 5 year rolling average.

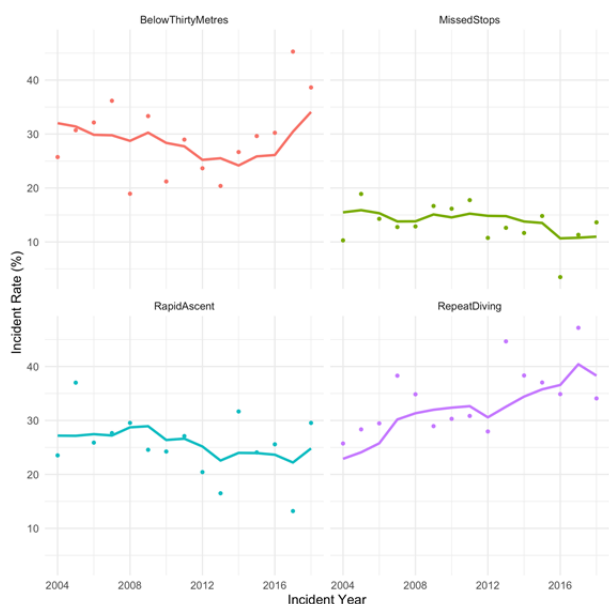


Figure 14b. Factors involved in incidents that have resulted in decompression illness. Trendlines are a 5 year rolling average.

**Ascent related incidents**

Ascent related incidents (Figures 15a, 15b) include all those in Category 4 as well as ascent related incidents which have resulted in a fatality or decompression illness. In order to understand the factors that may have resulted in the trends identified in the ascent related incidence we looked at the involvement of a number of other factors, where reported, in all ascent related incidents including those that resulted in DCI since 1999.

This revealed that given the variability there is currently no significant evidence for a change in the extent to which

these factors are involved in ascent related incidents. The most likely remaining explanation for the decline in ascent related incidents is that over the last 15 years diving organisations have developed an increased focus on ensuring divers are better trained in buoyancy control.

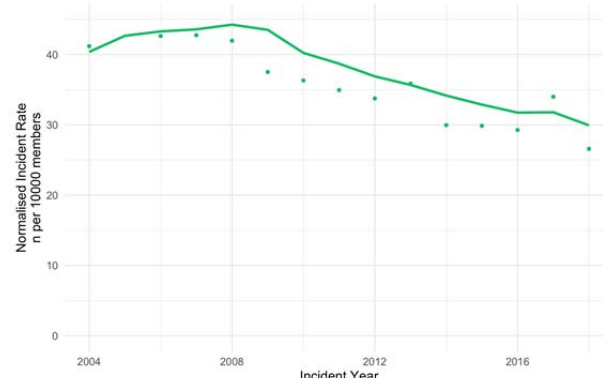


Fig 15a Ascent related incidents adjusted using membership as a proxy for diving activity in the UK. Trendlines are a 5 year rolling average.



Fig 15b Factors involved in ascent related incidents. Trendlines are a 5 year rolling average.

**Boating and Surface Incidents**

The adjusted number of incidents involving boating and surface issues in the last seven years shows an improving picture (Figure 16). However, this class of incident includes incidences of bad seamanship, boat and engine malfunction and incidences of lost divers. Analysis of the proportion of boating incidents in which these factors are reported shows that there is some evidence for a decrease in the proportion of boat and engine problems which is perhaps a reflection of their greater reliability.



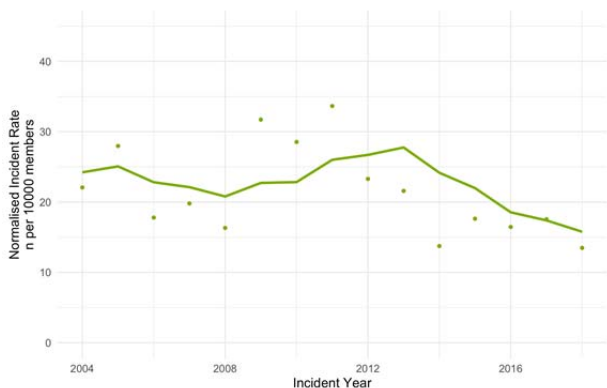


Fig 16a Boating incidents adjusted using membership as a proxy for diving activity in the UK. Trendlines are a 5 year rolling average.

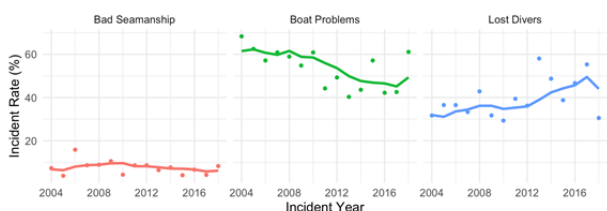


Fig 16b. Factors involved in boating incidents. Trendlines are a 5 year rolling average.

### Immersion Pulmonary Oedema (IPO)

We have previously highlighted in this report the growing belief that instances of IPO in divers may not be as rare as previously considered (see 2016 and 2017 reports).

We are continuing to consult with a medical expert to ascertain if IPO is likely in incidents where the description of the incident implies an IPO may have occurred. In light of the developing body of information we believe it continues to be important to remind divers to be aware of factors that could indicate IPO which include: -

- Divers with breathing difficulties when not exercising particularly strenuously. Breathing difficulties may be indicated by rapid, uneven or heavy breathing, or coughing uncontrollably.
- Confusion, swimming in the wrong or random directions.
- Inability to carry out normal functions, whilst appearing to have to concentrate on breathing.
- Belief that a regulator is not working properly.
- Indication of 'out of gas' when their regulator(s) are found to be working correctly and with adequate gas supplies.
- Divers refusing or rejecting an alternate source when 'out of gas'.
- Indication of difficulty of breathing when on the surface.

Advice from the medical experts at this time is that if you experience breathing difficulties underwater you should terminate the dive and ascend safely and exit the water. If you recognise any of the above factors in a buddy then assist them from the water as quickly as it is safe to do so. Once out of the water the casualty should sit, be given oxygen and medical advice sought.

In order to try and understand the factors that may give early indication of an IPO in a diving incident we analysed the synopses of over 100 incidents where we have judged an IPO may have led to the incident. We pooled similar words for example 'breathe; breathless and breathing'

and then used the word cloud technique to find common words used to describe the events surrounding IPO incidents. Figure 17 shows the most commonly used words in these synopses that give indication that an IPO may be a feature.



Figure 17. Word cloud generated from synopses of incidents where immersion pulmonary oedema is suspected.

### Efficacy of rescue and resuscitation techniques

In Table 1 we present evidence of the likelihood of success when using various rescue and resuscitation techniques. These data are amended from the 2018 old format report as we have included the incidents reported in the last three months of 2018.

The BSAC incident reports for the last six years were interrogated for data with respect to the likelihood of success when using rescue and resuscitation techniques taught to divers. In particular we were interested in the outcome of using the alternate source (AS) technique in an out of air or free flow scenario, the controlled buoyant lift (CBL) technique to recover divers to the surface, the outcome of using CPR and oxygen-enriched CPR and the outcome of using AED defibrillators.

Table 1. The efficacy of rescue techniques used in reported incidents

Technique	Reported use	Successful outcome <sup>3</sup>	Success rate
Alternative Air source Used <sup>1</sup>	133	114	86%
Controlled Buoyant Lift <sup>1</sup>	82	64	78%
CPR <sup>1</sup>	84	13	15%
Oxygen-enriched CPR <sup>1</sup>	23	5	23%
AED defib use <sup>2</sup>	20	6	30%

<sup>1</sup>analysis from data from 2013-2018 inclusive

<sup>2</sup>data extracted from the entire database

<sup>3</sup>successful outcome defined, for AS, as the casualty reaching surface without having to use free ascent; for CBL as the casualty reaching surface and for resuscitation techniques as the casualty regaining consciousness

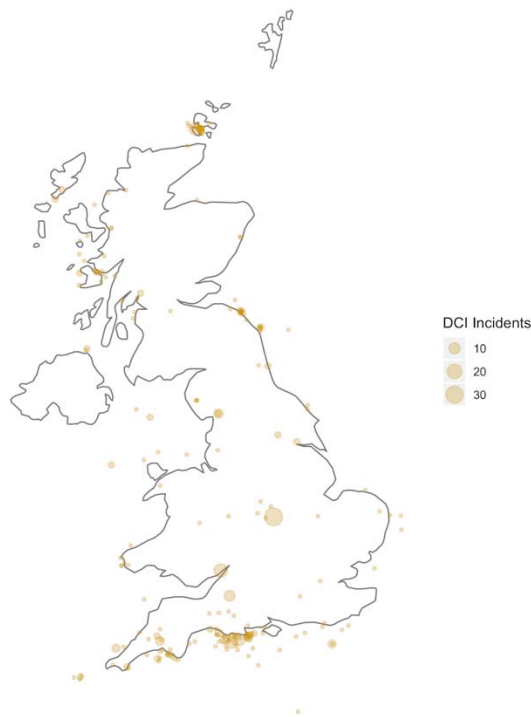
In the case of alternate source technique, we analysed if the technique resulted in the return of the diver to the surface without resorting to a free ascent, the technique included all cases where a diver resorted to using their own AS or an AS provided by a buddy. The controlled buoyant lift technique was defined as a diver using either the casualty's buoyancy or their own buoyancy to make a controlled ascent resulting in the casualty reaching the surface. CPR, oxygen-enriched CPR and AED were defined as when the technique was used in the rescue or attempted rescue of an unconscious casualty. Success of all of these three resuscitation techniques was defined as the recovery of the casualty to conscious and breathing. In Table 1, evidence is presented that, where a controlled buoyant lift was used, the technique was successful at recovering the casualty to the surface in 78% of the cases and in cases where an alternate source of gas was used the technique was successful in 86% of incident reports. It is reassuring that, even when under the stress of an occurring incident, the techniques taught by diving agencies to assist their buddy to the surface are successful in the majority of cases. The suspicion is that these success rates are a large underestimation of the actual success rate.

The instances where resuscitation techniques are called upon are significantly more serious because the casualty is by definition unconscious and not breathing. Even in these very difficult circumstances, the evidence is that divers have successfully resuscitated casualties. The success rate is 15% for CPR and 23% for oxygen-enriched CPR; and when an AED is used the success rate is increased to 30%.

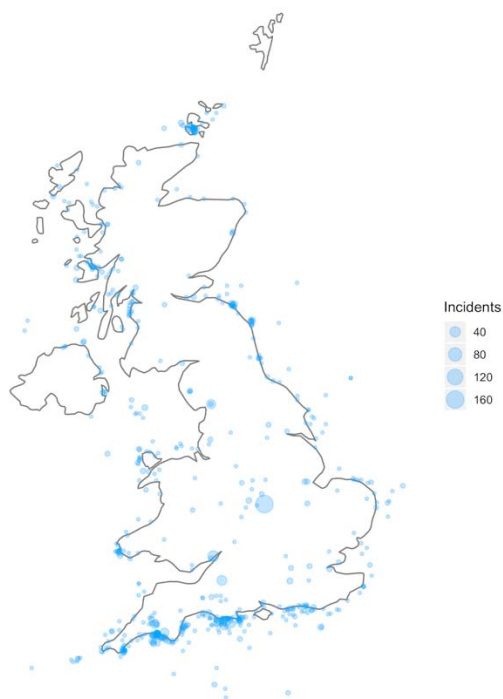
**Location of incidents and use of the emergency services**

In order to be able to report on the location of accidents we conducted a retrospective activity of entering the latitude and longitude of the dive site where known into the database. This enables us to report on the location of the incident in a visual way. Figure 18a shows the location of the reported incidents over the last six years. Figure 18b

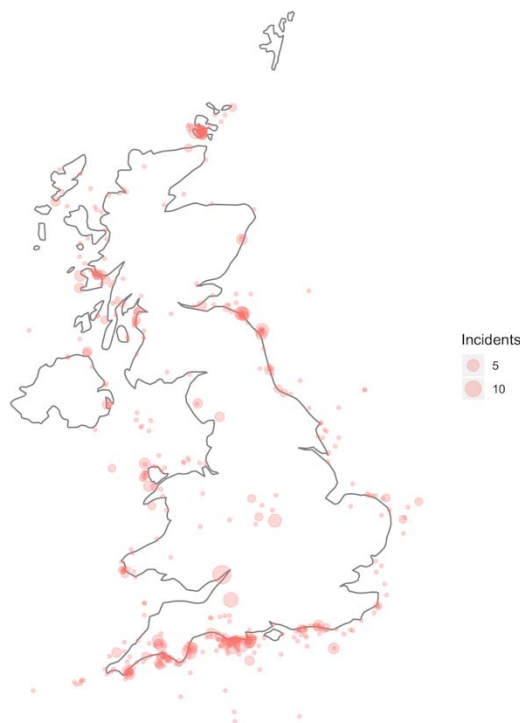
shows where the decompression incidents were reported and 18c shows where divers are supported by the Coastguard, RNLI or helicopter services. Divers continue to be extremely grateful for the support provided by the rescue services. These maps show where the diving activity is taking place and where emergency services are most frequently utilised in the UK.



**Figure 18b** The Location of Decompression Incidents in the UK 2013-2018



**Figure 18a** The Location of Incidents in the UK 2013-2018



**Figure 18c** The Location of Incidents where the Coastguard, RNLI or Helicopter services were in support in the UK 2013-2018

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### Conclusions

Key conclusions are: -

- The number of incidents reported has plateaued over the last four to five years.
- The monthly reporting trend follows the now usual pattern identified over the previous four years where the number of incidents rises in the spring to a peak over the summer and declines again in the autumn and winter months.
- The seventeen fatalities in the UK are unfortunately higher than the average (13.2) for the previous 10 years.
- There were three fatalities of divers over the age of seventy and the average age of the divers who died was 56.
- There are still strong indications for likely pre-existing medical causes or immersion pulmonary oedema from the description of the incident in some of the fatalities. We will continue to use the BSAC database with the support of consultant and diving medical referee Peter Wilmshurst to try to understand more about IPO.
- Diver age and potential related health and fitness issues are still featuring and may be critical factors in this and recent years' fatalities.
- The numbers of DCI cases per year is falling.
- Analysis of the efficacy of the diver rescue techniques of CBL and AS show that even in an incident scenario these techniques are deployed with a high chance of success and lives saved.
- Analysis of the resuscitation techniques implemented by divers when the casualty is unconscious and not breathing gives indication that, whilst our numbers are small, the recovery rates are comparable with the <10% reported by the Resuscitation Council for bystander CPR.

As has been stated for over fifty years in our annual report, most of the incidents reported within this document could have been avoided had those involved followed a few basic principles of safe diving practice. BSAC publishes a booklet called 'Safe Diving' which summarises all the key elements of safe diving and is available to all, free of charge, from the BSAC website or through BSAC HQ.

Remember you can never have too much practice of successful techniques such as controlled buoyant lift and alternate air source techniques. With respect to your resuscitation techniques, the evidence is that it is successful in a good proportion of cases and that it is worthwhile keeping your technique up to date and in practice. In addition, the message these data give is that it is always worth using CPR and that the success of your CPR could be significantly enhanced by having access to an AED.

## Fatalities

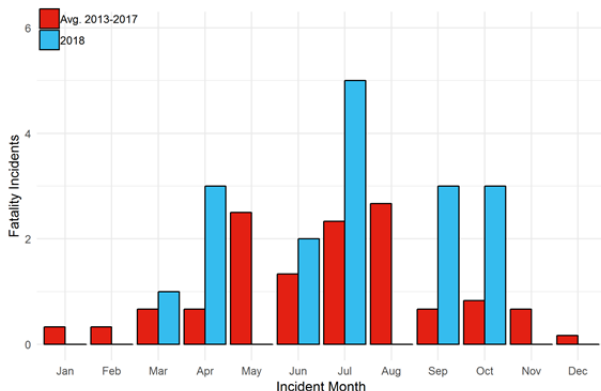


Figure 19. The month of occurrence of fatalities

**March 2018**

**18/044**

A buddy pair on a hardboat were about to enter the water to dive on a wreck at approximately 23m. One of the divers entered ahead of the other and descended. The buddy entered approximately 1 to 2 min later but was not seen again by the diver. He was using twin 12 lt cylinders of air and had said he felt a bit ill on the way to the site. The surface cover reported seeing a sudden burst of bubbles whilst the buddy had been on his descent. When the diver returned to the surface he had not seen his buddy and reported him as missing, the skipper of the hardboat broadcast a 'Mayday' call and the Coastguard launched a large scale search over the next two days but the buddy was not found. Units involved in the search were five lifeboats, a Coastguard Rescue helicopter, three Coastguard rescue teams, Police divers, a local port launch, a passing naval sail training vessel and the charter vessel the buddy was diving from. He was reported to be using a wing BCD and a drysuit, carrying two torches and a 2m orange DSMB. (Coastguard report).

**April 2018**

**18/078**

A CCR diver, using 15/45 diluent, carried out a dive from a hardboat. The diver reportedly had a rapid ascent from 40m and missed approximately 50 min of decompression stops. His buddy made a safe ascent completing the mandatory stops. When the diver surfaced, with a dive duration of approximately 45-50 min to a maximum depth of 57m, he was described as being semiconscious but still had the loop in his mouth. He was recovered aboard the hardboat and became unresponsive. The skipper, still with a number of divers in the water, issued a 'Mayday' call and CPR was administered. A Coastguard rescue helicopter was scrambled and two support vessels from a nearby windfarm were tasked to proceed to meet the hardboat, offer assistance using their first aid and AED equipment and to standby to assist with recovery of surfacing divers. The helicopter recovered the diver and transported him to a nearby helicopter landing site, which had been secured by a Coastguard rescue team, and he was transferred to a waiting ambulance. The diver was declared deceased. It was later reported that this was his first dive since November the year before. (Coastguard report).

**April 2018**

**18/052**

A diver using a CCR was diving in a buddy pair from a RHIB. During the dive on a wreck at approximately 20m the diver became separated from his buddy and was found unconscious and unresponsive on the surface by the skipper. He was recovered aboard the RHIB and CPR commenced. The RHIB still had other divers in the water. A Coastguard rescue helicopter and a lifeboat were tasked to assist and a passing ferry was also diverted to assist as it had an AED aboard. The diver was transferred to the ferry for defibrillation, was recovered from the ferry by the helicopter and airlifted to an awaiting ambulance at the ferry terminal. The diver was transferred to hospital where the Police confirmed later that he had died. (Coastguard report).

**April 2018**

**18/053**

A group of divers was carrying out shore dives. Three of the divers carried out a dive, the initial objective of which was to navigate to an underwater pinnacle at a depth of 12m and fix a SMB to its summit. This was to facilitate an instructor and his student to make a surface swim out to the site without the need for underwater navigation and complete the student's training with a 30m dive. The instructor, using air in a 7 lt independent twin-set with a stage cylinder of nitrox 44, and his student using air, swam out to the marker buoy and the student saw that air was escaping from the instructor's wing BCD hose as he attempted to inflate it. The instructor was struggling to stay on the surface and a few metres from the buoy he sank. Using the SMB's thin line, he managed to regain the surface and was grasping at the buoy for support. He shouted at the student to release his weightbelt and the student submerged a little, managed to release it and it dropped away. The student was holding onto the instructor when he became unconscious, heavy and dragged the student down. The student released his hold and the instructor sank while the student remained on the surface and called for help. Two divers on the shore swam out to the student and recovered him to the shore. The shore cover contacted the emergency services and a large multi-agency group, including ambulance, air ambulance, rescue helicopter, fire brigade, police, mountain rescue and Coastguard rescue teams arrived on the scene. Divers from another group on the site searched for and recovered the instructor from 26m. It was noted that as the rescuers tried to make the instructor buoyant, air bubbles immediately escaped from what appeared to be the joint between the instructor's wing BCD and inflator tube. The instructor was recovered to the surface and taken ashore by the mountain rescue team's boat. Back on shore the crews from the ambulance and air ambulance made extensive efforts to revive the diver but were unsuccessful. An inquest found that the diver had significant undiagnosed narrowing of the arteries of the heart and cause of death was recorded as natural causes.

**June 2018**

**18/080**

It was reported that a diver had surfaced unconscious, possibly that he had hit his head at the surface on his dive boat. A Coastguard rescue helicopter and Coastguard rescue teams were tasked to provide medical assistance.



The helicopter airlifted the diver to hospital where he was declared deceased. The buddy was found to be safe and well. Appeals were issued by the Police to three kayakers who were believed to have gone to the diver's aid but who had left the scene before giving their details. (Coastguard report).

*June 2018*

*18/093*

A diver carried out a shore dive on a CCR course. He was on his second dive of the day, following a previous dive to a maximum depth of 32m for a total dive time of 61 min, the seventh of the course. The diver, accompanied by an instructor and a safety diver, conducted a dive to a maximum depth of 36m and was at a depth of 32m when he indicated something was wrong and he was assisted to the surface by his two buddies in what became a rapid ascent. On the surface the alarm was raised but the rescue boat was unable to recover the diver and he had to be towed to a jetty where CPR including oxygen were applied. The diver was declared deceased at the scene. The instructor complained of a headache and was taken to hospital for observation.

*July 2018*

*18/099*

A dive charter boat reported a diver overdue from a 44m dive. He was reported to be using twin 10 lt cylinders and a 3 lt stage cylinder of nitrox 50. A large number of leisure and commercial vessels responded to the Coastguard's 'Mayday Relay' broadcast, and were tasked to search for the diver. Three lifeboats, a Coastguard rescue helicopter and three Coastguard rescue teams were all tasked to search for the diver. Searches were conducted overnight and the following day. The search continued over the next two days with Police divers searching to depths of around 46m. Two weeks later a body was recovered by the Police divers but they were not in a position at that time to identify the body. (Coastguard report). Update from coroner's inquest held on 13/02/2019 was that the deceased had suffered a coronary event on entering the water and died of natural causes. The pathologist had found that one coronary artery had severe narrowing and there was evidence of Ketones within the blood. This would have possibly led to a coronary episode. Witnesses on the boat said there was a loud splash and the diver's arms were seen to be waving about but he appeared to sort himself out and descended. However, another witness stated that when he was descending there was a gentle stream of bubbles coming from the diver and not the usual plume when someone exhales. The dive computer recorded that the diver went directly to the bottom at 46m without stopping within 90 sec.

*July 2018*

*18/104*

A group of four open circuit divers using air and a CCR diver carried out a shore dive. The four open circuit divers entered the water as two buddy pairs. The CCR diver's plan was that he was going to dive in the shallows and practise buoyancy with his new scooter. He had dived with it about six times before and solo dived with it two weeks before. Just before descending, one of the group shouted to the CCR diver to see if he was alright to which he replied he was and would be entering the water in a few minutes. The two buddy pairs carried out their dive and around 50 min later separated from each other towards the end of the dive. One of the buddy pairs swam towards their exit point when they saw a shape ahead. When they got closer they saw it was the CCR diver lying on his side with feet raised and without fins. His unit was on

the seabed at around 2m with one shoulder strap unclipped but the other still clipped holding the diver down. The pair pulled the CCR diver to the surface, towed him ashore and recovered him from the water. They began CPR and called the emergency services. The Coastguard tasked a rescue helicopter, an air ambulance, a lifeboat and two Coastguard rescue teams to assist. The second buddy pair surfaced and in rotation with the first pair, continued with CPR and oxygen enriched rescue breaths. Their efforts continued for 30 min and a helicopter arrived. The winchman touched down in the water, ran across the rocks, checked information with the divers, and the CCR diver was winched aboard and taken to hospital. Police on the scene later informed the group that the CCR diver had died. The diver's scooter was found later washed up on a rocky beach by the Coastguard approximately 30m to the right of the entry point. When collecting the CCR diver's kit together it was noticed that the diluent cylinder was empty.

*July 2018*

*18/102*

A solo diver undertook a dive from a small dory with one person remaining aboard. Approximately 5 min after entering the water the diver was reported by the vessel to be on the surface and unresponsive. A lifeboat and Coastguard rescue helicopter were tasked to provide immediate medical care and onward transport. The diver was recovered by the lifeboat and taken to a harbour where he was passed over to the care of paramedics from the ambulance service who were unable to save him. A rescue helicopter had been tasked to assist but was stood down upon its arrival. (Coastguard report).

*July 2018*

*18/111*

A group of three divers conducted a wreck dive from a charter boat to a maximum depth of 31m. At the bottom they exchanged OK signals and commenced the dive. A short while later one of the divers indicated that he wanted to ascend. One of his buddies indicated for him to return to the shotline for ascent rather than deploy a DSMB. As they approached the shotline they saw other divers completing their descent and the buddy exchanged hand signals with one of them. As the buddy turned back he noted that the diver had not followed him and had ascended slightly and was 1 or 2m from the wreck near the boiler. The buddy closed with the diver, turned him towards himself and tried to calm him and signalled him to stop, including shouting through his demand valve. At this point the diver was moving uncontrollably and was not responsive but retaining his regulator in his mouth and his gaze was fixed. The buddy did not note any signs of inhaling or exhaling from the diver. The buddy then conducted a controlled buoyant lift during which the diver remained unresponsive and moving uncontrollably with his hands and head moving erratically. The diver retained his regulator in his mouth until reaching 11m on the ascent at which point it fell from his mouth. The buddy tried to reinsert the regulator but the diver was unresponsive and so the buddy continued the lift direct to the surface omitting any safety stops. On the surface the diver remained unresponsive with a fixed glazed expression and foam like liquid was being excreted from his mouth. The buddy tried to clear the diver's airway by scooping the liquid from his mouth but it was simply replaced by more fluid. Both divers were recovered aboard and CPR commenced. During CPR efforts had to be stopped frequently to scoop out froth/foam like liquid from the diver's mouth and then recommence CPR. Initially nitrox was used for enriched rescue breaths before oxygen

was located and switched for the nitrox. A Coastguard rescue helicopter and two lifeboats were tasked to provide medical care and recover the remaining divers. A paramedic was put aboard the charter boat to assist with CPR efforts. The buddy and other rescuers were taken aboard a lifeboat whilst the paramedic and lifeboat crew took over CPR and the buddy was placed on oxygen. The diver's buddy reported that he believed that the casualty had an oxygen toxicity convulsion at about 10m. Both divers were taken to hospital but the diver who had been rescued by his buddy did not survive.

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**July 2018** **18/122**

A 'Mayday Relay' was received by a dive boat on behalf of another dive boat who had an unresponsive diver aboard. The diver had conducted a 36m dive in a buddy pair but became unresponsive on the seabed. His buddy lifted him to the surface and the diver was recovered aboard and CPR started. The second dive boat also proceeded to provide assistance whilst a lifeboat was tasked to the scene. The vessel made its way back into harbour with CPR ongoing and was met by an ambulance and a Coastguard rescue team. The ambulance service personnel declared the diver deceased aboard the vessel. It was reported that although the diver was reasonably experienced this trip was his first experience of cold water diving. It was his third dive of the trip and he was using a nitrox mix. (Coastguard report).

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**September 2018** **18/163**

A diver was diving with two buddies from a charter boat. The previous day he had completed 2 dives 30m for a total dive time of 45 min and three hours later 10m for a total dive time of 45 min. The diver and his buddies conducted a dive on a wreck to a maximum depth of 28m. On ascent he deployed his own DSMB in addition to that of his buddies who deployed one between them. All reeled up slowly to a depth of 12m when the diver lost control of his buoyancy and ended up on the surface. He was found a short time later by one of his surfacing buddies face down and unresponsive and the alarm was raised with the boat. He was recovered aboard the vessel, and CPR with oxygen enriched rescue breaths commenced. One local dive boat responded to the 'Mayday' communications, proceeding to the charter boat with an AED. Other divers were still in the water. Coastguard tasked two lifeboats and two helicopters to assist with diver recovery, and with resuscitation attempts. The diver was declared dead on arrival at hospital. The result of a subsequent post mortem found evidence of a massive heart attack as well as evidence of an enlarged heart, liver damage and emphysema, none of which was known prior to diving.

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**September 2018** **18/169**

A diver was doing a successive fun dive with two other divers. During the ascent from a maximum depth of 9m the two other divers noted the diver was not with them anymore. After a brief search they found the diver on her back facing the surface at 9m. As the diver was unresponsive they started to bring her to the surface. Reaching the surface, they inflated her BCD and drysuit, ditched the weightbelt and called for help and started in-water rescue breaths. The site rescue boat arrived, recovered the diver from the water and the diver was taken ashore and resuscitation with oxygen was administered. The emergency services attended and the diver was taken by ambulance to hospital. The diver's

buddy had no ill effects but it was later reported that the diver did not survive.

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**September 2018** **18/167**

An instructor and student carried out a shore dive on a CCR course. They descended to a maximum depth of 30m but due to the poor visibility the instructor elected to ascend by following a line to a 20m shelf. During the ascent they lost contact with the line and at a depth of 27m when the instructor turned to check his student he saw him bailing out onto open circuit. As the instructor went to assist, the student lost buoyancy and the regulator fell from his mouth. The instructor grabbed the student, tried to provide his alternate source and noticed his eyes were closed and he appeared unresponsive. The instructor carried out a controlled buoyant lift which became a fast ascent. At the surface assistance was summoned and a rescue team from the dive centre recovered both divers. Emergency services attended but the student did not recover.

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**October 2018** **19/014**

A diver, her buddy and another diver carried out a shore dive. It was reported that during a dive on air to a maximum depth of 59m the diver had indicated a problem on the descent but then signalled she wanted to continue. It was also reported later at inquest that she had not carried out a dive to this depth before. Her buddy, who was ahead of her returned to escort her down. As they ascended the shotline the buddy noticed the diver was not pulling herself up and at 35m appeared to be struggling. It was reported that she dropped her regulator, her mask was filling up and she lost consciousness so the buddy carried out a fast buoyant lift to the surface. On the surface he shouted for help but the diver did not recover. The post mortem could not reveal a precise cause of death but two possibilities were suggested; a cardiac arrest on ascent or a cerebral gas embolism or a combination of the two. (Media report).

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**October 2018** **19/015**

A diver, wearing twin 12 lt cylinders and a 7 lt decompression cylinder, entered the water from a dive boat for a solo dive. He indicated he had a problem so the dive boat attempted to recover him using the boat lift. He had no regulator in his mouth, said that he had limited buoyancy and then fell back into the water and was seen to sink below the surface. It was later reported by the crew of the dive boat that they believed he did not have his gas switched on. A rescue helicopter, three lifeboats and a number of local vessels were all tasked to search for the diver but he was not located at the surface. (Coastguard & RNLI reports).

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**October 2018** **19/013**

A diver and his buddy using air carried out a shore dive. The intention was to swim a compass course with the plan to surface if they became separated. They did become separated and the diver made it back to shore. When the buddy not return the diver called the Coastguard. A rescue helicopter, Coastguard teams and two lifeboats were tasked to search for him. He was found by divers from a nearby dive boat and CPR commenced. The buddy was airlifted to hospital where he was declared deceased. (Coastguard report)

## Decompression Incidents

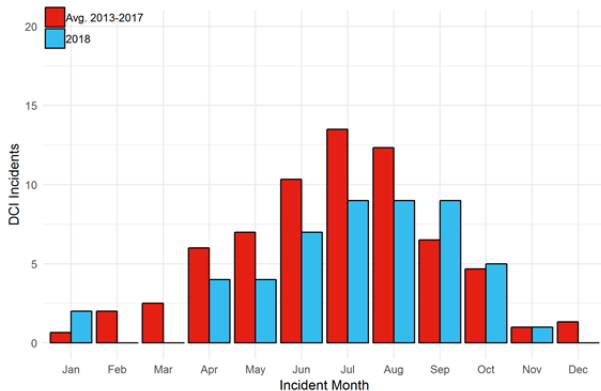


Figure 20. The month of occurrence of decompression incidents

January 2018

18/038

Three divers, using air, carried out a winter shore dive with a water temperature of 6 deg. One of the divers had made a buoyant ascent at one point during the dive and carried out safety stops but felt extremely cold. She surfaced with a dive duration of 38 min to a maximum depth of 21m and did not carry out a second dive. 6 hours after surfacing from the dive the diver became aware of discomfort in her left shoulder and a noticeable but intermittent ache in her left arm. The following day her symptoms were more pronounced and she was feeling very lethargic, her concentration was impaired and she had a headache which was only temporarily relieved by painkillers. This prompted the diver to contact a hyperbaric chamber for advice and evaluation. The diver was diagnosed with DCI and received two sessions of recompression treatment, the first of which almost completely resolved her symptoms and the second achieved complete resolution. A follow-up phone call the following day confirmed she was free of all symptoms. The diver was advised to avoid diving and flying for at least four weeks and have a diving medical before returning to diving.

January 2018

18/260

A diver had conducted a dive earlier in the day to a maximum depth of 22m for a total dive time of 58 min. Later that day the diver phoned the inland managed site saying that he had collapsed but provided conflicting information about the location. The diver was located sitting in his car at the roadside. An ambulance had been called and in assisting the diver from his car he reported being dizzy and was unable to support his own weight or move unassisted and kept one eye shut and subsequently vomited. Examination in the ambulance could find nothing untoward and sats were fine but the diver was taken to hospital. The hospital conducted further tests and all were fine but eventually a call was made to a local chamber who advised transfer for treatment. The diver underwent an 8 hour recompression treatment and was diagnosed with a CNS DCI. The diver was released home but remained unable to stand.

April 2018

18/300

A diver had completed four dives at an inland site using nitrox 32 but with his dive computer set to air. At the end of the final dive he made a fast ascent from 5m missing safety stops. The diver and his buddy had a long surface swim and during this the diver complained of chest pains and so his buddy assisted him into the shore. After exiting the water and de-kitting the diver complained of a numb right leg and asked the dive site staff to check him over. He was placed on oxygen and an ambulance called to transfer the diver to a recompression facility.

April 2018

18/148

A diver and his buddy had been carrying out a shore dive with an instructor as part of a drysuit course to a maximum depth of 18m. At the end of the dive the diver started to panic and then became unresponsive. The diver was at 16m at the time and sank to the seabed at a depth of 21m. The instructor removed the diver's weight system and inflated their BCD and controlled the ascent to the surface. As they approached the surface the ascent started to speed up and the instructor had to release the diver to avoid risk to themselves. Another instructor was on the surface and responded to the surfacing diver. The diver surfaced without a regulator in his mouth, was reported to be unresponsive and also vomiting blood. The instructor gave in-water rescue breaths and after a number of breaths the diver started to breathe independently. He was recovered ashore by other divers and first aid was administered including oxygen. A rescue helicopter, an air ambulance, a lifeboat and Coastguard rescue teams were all tasked to assist. The diver regained consciousness and his buddy began to present symptoms. Both divers were transferred to a hyperbaric chamber by the rescue helicopter. (see also 18/304 and 18/305)

April 2018

18/149

A diver, using air, conducted a boat dive to a maximum depth of 25m with a dive duration of 43 min. Immediately after surfacing the diver appeared pale, felt sick and was dizzy. The diver was put on oxygen and a local Coastguard rescue team and an ambulance were tasked to attend and medical advice was sought. On the assessment of a hyperbaric doctor a rescue helicopter was tasked to recover the diver and he was transferred to a hyperbaric chamber. (Coastguard report).

April 2018

18/305

An instructor was teaching a Drysuit speciality course with two students. After rapidly ascending with a student having difficulties, as a precaution the instructor was taken to a hyperbaric chamber, received 5 hours of treatment and was kept in hospital overnight as a precaution. (see also 18/148 and 18/304)

May 2018

18/058

A diver conducted a solo dive from a commercial dive charter using trimix 11/50 on CCR. The dive was to a maximum depth of 55m for a bottom time of 25 min. The diver was reported to have had an uncontrolled ascent from the bottom, missing approximately 30 min of

decompression, but had managed to deploy her DSMB. On the surface she became tangled in the line of her DSMB, and was recovered aboard the vessel. At this point 9 divers remained in the water, and the diver was presenting with chest pains. She was placed on oxygen, and medical advice sought from the duty doctor at the local hyperbaric chamber, who requested she be taken to A&E initially. A Coastguard Rescue Helicopter was tasked and recovered her from the vessel, whilst the vessel recovered the remaining divers. Selsey CRT prepared the helicopter landing site for the arrival of the diver. She was successfully transferred to hospital for assessment and treatment. It was later reported that the diver appeared to be having difficulty descending at the start of the dive. (Coastguard report).

**May 2018**

**18/060**

A diver was airlifted from a dive boat with DCI symptoms. He was taken to hospital where he had an echocardiogram, a chest x-ray and then a CT scan. 3 hours after surfacing the diver was transferred to a hyperbaric chamber. Just before going into the chamber the diver stood up from his bed and passed out. He came to with AED pads being applied to his chest, nurses administering IV bags, a doctor pressing his groin pressure points and an ambulance crew arrived. The diver was told he had had a pericardial arrest but did not know how long his heart had stopped but the AED was not used. He was rushed into the chamber accompanied by a doctor, who stayed with the diver until he had stabilised at depth, and had 9 hours of recompression treatment. Following this he was moved back to hospital, given morphine and rested overnight. The following day he returned to the chamber for another session of recompression treatment and remained in the area awaiting either further treatment or discharge the following day.

**May 2018**

**18/238**

A diver conducted a dive from a commercial dive charter in Scapa Flow on nitrox 30. He dived to 29m for 40 min, and had dived that morning to 40m for 45 min. Once back aboard the vessel, the casualty presented with a skin DCI, so was transferred back to port by the dive vessel, where an ambulance was arranged to transport him to the local hyperbaric chamber. (Coastguard report)

**May 2018**

**18/239**

A diver conducted a dive from a club RHIB using air, and had a rapid ascent from 27m, after 29 min, reportedly due to an equipment issue. No symptoms were present, Medical advice was sought and the doctor recommended recompression. Coastguard tasked a rescue helicopter to the vessel, and put their paramedic winchman on the vessel to assess the casualty. The diver was recovered onto the helicopter and transferred him to the nearest hyperbaric chamber, where he was met by CRT. (Coastguard report)

**June 2018**

**18/077**

After missing 12 min of stops on a 35m dive with a run time of 30 min, a diver was recovered back aboard a dive boat with no apparent symptoms. She had been using nitrox 29% travel gas and nitrox 70% in a stage cylinder. As she had missed stops she was put on oxygen. Approximately 1 hour later the diver began to experience nausea and a headache so the skipper declared a 'Pan Pan' and a Coastguard rescue helicopter was tasked to recover the

diver and transfer her to a recompression chamber. (Coastguard report).

**June 2018**

**18/181**

After returning aboard a dive boat a diver experienced chest pains, 'pins and needles' and loss of sensation in his legs. He had made a dive to a maximum depth of 27m for 25 min and had a normal ascent. Coastguard rescue teams and an ambulance met the dive boat in a harbour and the diver was taken to a recompression chamber. (Coastguard report).

**June 2018**

**18/182**

A CCR diver felt he had symptoms of DCI when returning into harbour. He had dived to a maximum depth of 45m for an 80 min run time. He had mottling on his legs and back so was put on oxygen. The dive boat called the ambulance service directly and the diver was transported to a recompression chamber by a land ambulance. The Coastguard was notified later to see if a helicopter was available but due to the time elapsed it was calculated the ambulance would be faster. (Coastguard report).

**June 2018**

**18/089**

On the second dive of the day a diver had a rapid ascent from 18m. He returned to that depth and continued his dive. He surfaced with a dive duration of 60 min to a maximum depth of 55m. Aboard a dive boat and approximately 30 min after surfacing he became dizzy and was vomiting. A Coastguard rescue team and helicopter were tasked to assist. The diver was taken to the nearest available recompression chamber. (Coastguard report).

**June 2018**

**18/092**

A CCR diver had been on a hardboat trip and all his dives had been conducted safely and within decompression requirements. Using trimix 20/30 he carried out a wreck dive on 1.3 PO<sub>2</sub> set point and 1.4 PO<sub>2</sub> for decompression at 6m. The diver reached a maximum depth of 45m and on the ascent carried out a 1 min stop at 12m, and a 4 min stop at 9m which was extended slightly due to congestion on the shotline and also extended his stop at 6m to 18 min. He made a slow ascent from 6m and surfaced with a dive duration of 69 min. Immediately on surfacing the diver had a pain in his right elbow but thought it was cramp. Back aboard the hardboat the elbow pain re-occurred but the diver felt this was a deep pain or strain and not a muscular pain. The diver asked for assistance to de-kit and was put on oxygen. The hardboat issued a 'Pan Pan' call and the Coastguard directed them to a nearby harbour. A Coastguard team and an ambulance arrived and the diver was taken to a hyperbaric chamber. A doctor carried out neurological assessments but the pain in the diver's elbow had subsided by this time. In consultation with a doctor at another hyperbaric chamber it was decided to give the diver precautionary recompression treatment. Following this the diver was advised that although it was suspected rather than confirmed DCI, he should not dive for 28 days but did not require a follow up medical.

**June 2018**

**18/188**

A diver had made a rapid ascent from approximately 20m and surfaced, unconscious but breathing, with a dive duration of 30 min. Other divers were still underwater. A



lifeboat and Coastguard rescue helicopter were tasked to locate the divers still in the water, recover them and assist the unconscious diver. He was airlifted to a recompression chamber. (Coastguard report).

**June 2018**

**18/119**

A diver was on a three day boat diving trip with all her dives carried out at approximately 15m for around 45 min. On the final day she and her buddy, both using air, carried out a dive to a maximum depth of 15m with a dive duration of 42 min and after a surface interval carried out her eighth and last dive. The diver was using a second hand drysuit which fitted reasonably well but was a little tight on the hips and as she felt cold in the water she was wearing a couple of ski thermal sets underneath. The dive was through gullies and the diver was very anxious as the visibility was poor, she was scared of losing her buddy and she was rapidly using her air. She felt buoyant and feeling herself floating upwards she kept holding onto rocks to keep herself down. The diver lost sight of her buddy when she grabbed a rock with both hands, panicked, made a rapid ascent taking 1 min from 14m and surfaced with a dive duration of 32 min to a maximum depth of 15m. The boat recovered the diver and she felt fine once she had calmed down. She was offered oxygen that evening but feeling fine she only stayed on it for a few minutes. The diver drove home the next day and had 'pins and needles' in her arm which became worse as time went on and became painful. She contacted a hyperbaric chamber and drove straight there where she underwent two full and two shorter sessions of recompression treatment. She passed a full medical a month later and was allowed to return to diving but advised to limit this to no more than two dives a day and no more than two consecutive days of diving before taking 24 hours off.

**July 2018**

**18/097**

A diver had completed a 50m dive with a 70 min run time from a dive boat. Approximately 90 min after surfacing the diver began to experience shoulder pain, felt dizzy, had a tightness in his chest and was reported to appear pale. The dive boat made best speed back to its berth, and requested Coastguard assistance. Medical advice was sought from a dive doctor who felt the diver should go to a hyperbaric chamber for assessment and treatment. The boat was met alongside by a Coastguard rescue team and the diver was transferred to a helicopter and taken to the nearest recompression facility. (Coastguard report).

**July 2018**

**18/100**

A buddy pair conducted a dive to 30m from a commercial dive boat. The divers were using nitrox 28 and nitrox 32. One diver began to have difficulties at 27m so they both ascended to 15m at which point one diver made a rapid ascent to the surface with a dive duration of 28 min. His buddy, a qualified instructor, went to his aid but also ended up making a rapid ascent from the same depth. Once aboard the dive boat the divers were put on oxygen and Coastguard assistance requested. A lifeboat and Coastguard rescue helicopter were tasked to assist. The lifeboat arrived first on scene and stood by whilst the helicopter lifted both divers and transported them to the nearest hyperbaric chamber. A Coastguard rescue team met the boat on its return to harbour and another rescue team manned the helicopter landing site and assisted in transferring the divers to the awaiting ambulance to take them to the chamber. It was later reported that the diver believed he was under-weighted. (Coastguard report).

**July 2018**

**18/109**

An instructor and three students all using air were undertaking advanced lifesaver rescue assessments supported by a RHIB with two crew. The students carried out BAR checks but did not do a 'hands on' check of each other's equipment. The first controlled buoyant lift was only partially controlled by the 'rescuer' resulting in a buoyant ascent from 22m to approximately 2m below the surface before re-descending to 7m. During the second lift from 22m to 6m the 'rescuer' mistakenly activated the air horn fitted on the 'casualty's' BCD rather than venting air from it. By the time the 'rescuer' realised his mistake the ascent was out of control. The instructor attempted to slow it down by grabbing hold of the 'casualty' but was unsuccessful and the group surfaced. They re-grouped on the surface but as they re-descended again the instructor's mask strap snapped resulting in the group re-surfacing. Once a spare mask was supplied by the RHIB, the divers tried to re-descend for the third time but the instructor experienced severe vertigo and aborted the dive. The divers surfaced with a dive duration of 25 min to a maximum depth of 22m. At the surface the instructor was slightly disorientated, vomited and wanted to go ashore where he was seen to very unsteady on his feet as he walked up the beach. He was still nauseous several minutes later, was put on oxygen and fluids whilst the emergency services were called. The instructor could not stand unaided and was only comfortable in a sitting position as any attempt to lie down resulted in increased nausea and vomiting. The instructor was airlifted by helicopter to a recompression chamber where he was diagnosed with a vestibular DCI and he underwent several sessions of recompression treatment. It was reported the instructor had been in a 4m pool the previous evening testing regulators which had involved numerous descents and was also reported to have had no breakfast the morning of the dive.

**July 2018**

**18/196**

Two divers had conducted a dive to a maximum depth of 44m. When back on shore, one felt unwell enough to call for an ambulance who assessed the casualty and arranged for transport to a recompression chamber. The Coastguard was notified for awareness only. (Coastguard report).

**July 2018**

**18/198**

A diver and his buddy conducted a dive on a wreck initially between 20 and 25m. One of the divers had some issues clearing his ears and once this was resolved the pair descended to around 27m where the shot was snagged. The pair had been asked by the skipper to dislodge the shot. Once they had completed this they descended further to 31m then moved steadily shallower on the wreck eventually reaching a depth of 15m. Along the way the pair had met up with another pair of divers and when the divers had some problems with deployment of their DSMB one of the second pair deployed theirs and the group of 4 started to ascend. At around 7m one of the divers was surrounded by bubbles and the diver felt they caused him to become more buoyant and he lost control and ascended rapidly to the surface. Once back aboard the charter boat, approximately 50 min after surfacing the diver reported his right leg going numb and began to experience a rash, 'pins and needles' in the legs and abdominal pain. The skipper of the dive boat assessed the diver, advised administration of oxygen and fluids and made a 'Pan Pan' call for advice. A Coastguard rescue

helicopter was tasked to recover the diver and transported him to the nearest hyperbaric facility. It was reported that it was the diver's first dive of the day and that he believed he had made a normal ascent. (Coastguard report).

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**July 2018** **18/115**

A diver completed a dive to a maximum depth of 52m with a dive duration of 30 min and completed all stops on his ascent. When back aboard the dive boat he began to experience shoulder pain. Medical advice was sought from a dive doctor who wanted the diver transferred to the nearest chamber for assessment and possible treatment. A Coastguard rescue helicopter was tasked to recover the diver and transported him to the nearest chamber. The dive boat was met alongside by a Coastguard rescue team. (Coastguard report).

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**July 2018** **18/199**

The Coastguard received a call from a diver who had started to experience symptoms of DCI whilst back at home inland. After discussion with the ambulance service it transpired that no helicopter was available so a Coastguard rescue helicopter was tasked and transported the diver to a hyperbaric chamber. (Coastguard report).

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**July 2018** **18/200**

Request for assistance was received from the Isle of Man when a diver had missed a 3 minute stop at 9m after a dive to a maximum depth of 33m for a dive duration of 29 min. He was experiencing a 'tingling' in his legs, so a Coastguard rescue helicopter transported him to an appropriate chamber on the mainland. (Coastguard report).

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**July 2018** **18/250**

A diver conducted two dives from a charter boat to a maximum depth of 35m including stops at 17m for 1 min and 5m for 7 min with a total dive time of 37 min, then following a surface interval of 2hr 51 min completed a second dive to a maximum depth of 27m with stops at 14m for 1 min and 6m for 10 min with a total dive time of 51 min. During the 6m stops on the second dive the diver's main computer and that of his buddy cleared all required stops after about 5 min but his second computer indicated he had a further 5 min of stops. The diver completed these additional stops but omitted any safety stops. Once back aboard the charter vessel the diver felt OK, stowed his kit and had a cup of tea. During the journey back to harbour the diver started to feel tired and not himself so he lay down on the deck and tried to sleep. On approaching harbour the diver tried to stand and get his kit together but found he was struggling with his balance and felt unwell and sat down and closed his eyes. The other divers aboard noted the situation for the first time at this point. The diver was insistent that he was OK and did not have DCI and would be OK and he drank a lot of water. Once alongside the diver's vision seemed 'confused' and he had to make a concerted effort to climb up the ladder onto the pier and once at the top felt really grotty. The diver sat on a bollard whilst his colleagues went to get a vehicle to take him back to his accommodation as he was still insistent on not having DCI. When the others returned the diver opened his eyes and found the vision in his left eye was blurred and he consequently acknowledged that he required medical assistance. A local chamber was notified and the doctor agreed to meet the diver at the chamber and he was

transported there by his colleagues. On arrival at the chamber the diver vomited the water he had consumed. The diver was examined by the doctor and the diver was unable to complete a heel to toe exercise successfully. The diver also reported tenderness in his chest and stomach but on examination there was no visible rash. The diver reported that he had experienced similar tenderness several times before but had not previously sought medical advice and it normally cleared after about a week. The diver was recompressed with resolution of all symptoms except for the tenderness. The diver was advised not to dive for 28 days and to seek advice from a diving doctor and should consider tests for a PFO. The diver subsequently had tests for a PFO and has been informed that he does have a PFO.

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**August 2018** **18/201**

A diver undertook two dives from a dive boat. Both dives were to 35m, with a surface interval in-between. After the second dive he reported pain in his left arm so was placed on oxygen and the boat returned to the harbour where he was met by a Coastguard rescue team and an ambulance which transported him to the local hyperbaric chamber. (Coastguard report).

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**August 2018** **18/166**

A diver and his buddy had carried out two boat dives on a Saturday, the first to a maximum depth of 13m with a dive duration of 65 min and after a surface interval of 1 hour 16 min the second dive was to a maximum depth of 20m with a dive duration of 61 min. A 3 min safety stop at 5m was carried out on both dives. On the Sunday and with a surface interval of 19 hours 57 min the diver, using nitrox 26 and his buddy air, carried out a dive to a maximum depth of 21m with a dive duration of 60 min including a 3 min safety stop at 5m. The diver's drysuit had leaked and he was quite wet but did not feel cold. About 30 min after surfacing, having had a coffee and cake, the diver was about to try the skipper's drysuit so had changed his undersuit and socks when he began to feel unwell. He had a pain in his right chest that felt like a pulled muscle and after a few minutes his right leg started to feel heavy. The diver was put on oxygen and the skipper started to return to harbour. Around 15 to 20 min later the diver reported that his chest felt better but his leg was still heavy and weak. After 30 min the boat arrived back in harbour and the diver felt well enough to climb the ladder to get off the boat and the skipper took the diver by car to the lifeboat station where he was given more oxygen. The Coastguard was contacted as well as a hyperbaric doctor and the decision was made to take the diver by helicopter to a recompression chamber. The diver was initially moved by land ambulance and paramedics carried out an ECG which gave them concern so they referred this to another hospital where a doctor said the results were fine and the transfer to the recompression chamber should continue. A helicopter transferred the diver to the recompression chamber where he was initially taken to A&E and had a chest x-ray and blood tests which did not indicate problems. The diver was then taken back to the chamber where he received around 5 hours of recompression treatment. He was transferred to a ward for observation before being discharged around mid-day on the Monday. The doctor recommended that the diver did not fly for two weeks and did not dive again until further tests and diagnosis were complete. The diver has since had a PFO test which confirmed that he did have a PFO.

August 2018

18/127

On the first day of a hardboat wreck diving trip a diver and her buddy, both using nitrox, had carried out two dives. The first was to a maximum depth of 28m with a dive duration of 38 min and the second was to a maximum depth of 26m with a dive duration of 49 min. They had carried out a 1 min stop and a 3 min safety stop at 6m on both dives. On the second day the diver and her buddy, both using nitrox 30, carried out a wreck dive to a maximum depth of 34m with a dive duration of 49 min including a 4 min stop and a 3 min safety stop at 6m. An hour after surfacing the diver complained of itching in her right arm and noticed some mottled red discolouration of the skin. The diver reported this to her buddies and the skipper. He recognised the symptoms of DCI, initiated first aid treatment and called the Coastguard. The diver was given oxygen as the hardboat motored to the nearest convenient landing point where it was met by an ambulance which took the diver to a hyperbaric chamber. The diver was diagnosed with skin DCI as the symptoms persisted throughout the assessment including a 'tingling' moving down her arm and fingers. She was given recompression treatment and returned to her accommodation that evening where she met up with her buddy, who had no symptoms, and others in her group for dinner. The following day she was discharged by the hyperbaric chamber, instructed to visit the local GP, which she did, and it was recommended that she have a PFO test at the earliest opportunity. During the hyperbaric doctor's assessment, they had mentioned that coughing can cause problems in the case of a PFO and the diver remembered that she had a brief coughing fit on her ascent due to a dry, tickly throat.

August 2018

18/202

A diver completed a boat dive to a maximum depth of 38m for 37 min run time completing a 5 min stop at 5m. Back aboard the diver began to experience pain in one side and numbness in her legs. Medical advice was sought from a dive doctor and she was taken back to harbour, then transported by a Coastguard rescue helicopter to a recompression chamber. (Coastguard report).

August 2018

18/155

Three divers carried out a drift dive for scallops from a hardboat. The dive leader used an SMB and it was agreed that if the visibility was poor or the current running on the bottom her buddies would attach buddy lines. The divers descended to 10m and with poor visibility the buddies attached their buddy lines, approximately 5m long, to the dive leader with one on her right and the other on her left. After approximately 10 min the divers drifted to around 24m. They collected scallops into their goody bags and after a dive time of around 30 min one of the buddies indicated he had a couple of minutes of no stop time left so the dive leader signalled to her other buddy and they all agreed to ascend. The dive leader clipped the SMB reel onto a 'D' ring on the left hand shoulder of her BCD so it was out of the way as she removed a lift bag from her BCD's right hand pocket. She clipped her goody bag of scallops onto the lift bag, added a little air with her alternate source regulator and both buddies attached their goody bags. She signalled 'OK', checked everything was clear and added more air to the lift bag. The bag ascended to the surface but as it did so the three bags of scallops spiralled around and became entangled in the SMB line. The dive leader, still with the SMB attached to her, was pulled rapidly upwards to the surface. The

buddies saw her disappear from view, one managed to detach his buddy line but the other realised from his buoyancy and ascent rate that keeping his buddy line attached was not going to help so he unclipped it and managed to slow his ascent at 8m. He could see the other buddy's bubbles so stayed over them as he ascended to 6m where the buddy joined him around 2 min later and they surfaced after a further 2 min at 6m with a dive duration of around 36 min to a maximum depth of 24m and were recovered aboard the boat. Meanwhile the dive leader had re-descended for 10 min to carry out stops at 10m and 5m, re-surfaced and was recovered aboard the boat. The skipper put her immediately on oxygen and she said she felt fine other than 'pins and needles' in her left arm, which she put down to her drysuit's slightly tight wrist seal, and an uncomfortable shoulder which had been jerked when she had been pulled up. After 10 min the skipper made a 'Pan Pan' call to the Coastguard who linked the boat directly with doctors at a hyperbaric chamber. The Coastguard gave instructions for the boat to return to harbour for the dive leader to be met by an ambulance. This was subsequently changed and the boat instructed to leave the harbour so the dive leader could be evacuated by helicopter. The dive leader remained on oxygen until she and the buddy who had made the buoyant ascent to 8m were airlifted to the chamber. At the chamber and with no apparent ill effects the dive leader was given precautionary recompression treatment.

August 2018

18/203

A dive boat called for assistance after two divers had rapid ascents after a dive to a maximum depth of 45m with a dive duration of 75 min. They reported they had an equipment issue and ascended from 30m. One of the divers was on open circuit using nitrox 28, the other on a CCR using 20/23 diluent. One of the divers had a nose bleed and the other was disoriented and shaken. A lifeboat was tasked to stand by and recover three other divers in the water but the dive boat managed this without assistance so the lifeboat was stood down. A Coastguard rescue helicopter picked up both divers and transported them to a recompression chamber. (Coastguard report).

August 2018

18/152

A trimix diver using twin 12 lt cylinders with trimix 20/35 dive gas and nitrox 40 and nitrox 80 side mount cylinders carried out a dive for a dive duration of 45 min to a maximum depth of 59m. The following day he carried out a dive using a trimix 20/30 mix in twin 15 lt cylinders and with the same side-mount cylinders to a maximum depth of 33m with a dive duration of 72 min including a 3 min stop at 18m, a 3 min stop at 12m, a 5 min stop at 9m and a 18 min stop at 6m. 5 hours after surfacing he returned home, washed his kit and experienced two quick bouts of 'sea legs' where he momentarily had to grab furniture to steady himself but put this down to it having been a bit rough that day with wind against tide for the first third of the dive boat's two hour journey. He woke early the next morning to go to the toilet and found he had to hold onto walls and door frames as, although not nauseous, his balance had gone. The diver strongly suspected a vestibular DCI but decided to wait another couple of hours. Waking later with the same symptoms he contacted a hyperbaric chamber and made arrangements to attend. When he arrived, he walked with the 'stagger' and could not walk in a straight line. He received recompression treatment for five and a half hours after which he could walk in a straight line but still had balance

issues when he moved his head. The diver reported that he had not re-charged his nitrox 80 side-mount and after 10 min using it on the 6m decompression stop he switched back to his 30 mix for the last 10 min. He did not want to use the nitrox 40 side-mount as he wanted to keep this for his next dive although well aware of the risk of isobaric counter diffusion switching from a high helium mix to a high nitrogen mix.

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**August 2018**

**18/204**

A CCR diver completed a dive to a maximum depth of 47m with a dive duration of 63 min. After about 10 min back aboard the dive boat the diver began to experience breathing difficulties. The skipper called 'Pan Pan' and a Coastguard rescue helicopter was tasked to recover the diver and take them to a recompression chamber. The dive boat made it back to port before the helicopter arrived and was met by an ambulance which took the diver to the chamber. (Coastguard report).

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**August 2018**

**18/310**

After a full day teaching multiple courses with several ascents and descents, some of them a little fast, an instructor felt unwell. The next day she saw the medical services and was treated for DCI and advised not to dive again for 28 days.

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**September 2018**

**18/242**

A diver had conducted a 57m dive using trimix 18/40, and missed a stop on the way up. His buddy was still in the water. Once the casualty was aboard the vessel, he became weak and complained of chest pains. CG assistance was requested, and Coastguard tasked a rescue helicopter, which transferred the diver to the nearest chamber, where he was met by Poole CRT. (Coastguard report)

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**September 2018**

**18/243**

Coastguard received a request for assistance from the ambulance service. After conducting dives earlier in the day, a 21 year old male had gone back to his accommodation and called the ambulance when he was experiencing DCI symptoms. Coastguard tasked a rescue helicopter which transferred him to the chamber, where he was met by CRT. Limited details known as ambulance incident. (Coastguard report)

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**September 2018**

**18/244**

Coastguard tasked an inshore lifeboat to recover a diver from a vessel near Lundy. The diver had surfaced with pain in his arm, and the duty dive doctor had requested he be transferred to the chamber for assessment. The vessel still had divers in the water, so the lifeboat was also tasked to assist in recovering them if required. The lifeboat brought the diver alongside, where he was met by CRT then taken to the chamber by helicopter. (Coastguard report)

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**September 2018**

**18/245**

Coastguard received a request for assistance from the ambulance service. After diving at an inland managed dive site, a diver began to experience nausea and loss of balance. Coastguard tasked a rescue helicopter which transferred him to the chamber. Limited details known as ambulance incident. (Coastguard report)

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**September 2018**

**18/246**

A diver conducted two dives from a charter boat. On the first dive, to a maximum depth of 36m for 35 min, he missed 5 min of decompression stops. After a surface interval he undertook a second dive, to 26m for 59 min, completing approximately 20 min of stops. Back aboard the charter vessel he reported chest pains and struggling to walk. The diver presented himself to the chamber as it was close by. (Coastguard report)

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**September 2018**

**18/311**

After 10 consecutive work days a diver did 2 consecutive recreational dives, with the last being to a maximum depth of 18m. After completing the dives the casualty felt unwell and sought medical help. He was treated for DCI and advised not to dive again for a month.

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**September 2018**

**18/274**

A diver had conducted two dives the previous day to 36m for a total of 37 min and around 150 min later a dive to 17m for a total dive time of 50 min. The following day the diver was using a gas mix of nitrox 28 as was his buddy. However, the diver had not slept well overnight and the dive plan changed to a different site and the pair were joined by a third diver for a wreck dive to a planned maximum depth of 40m. As a consequence, the diver and his buddy forgot to change the settings on their dive computers and they were set to air rather than nitrox 28. The group descended the shotline to a wreck at 29m and they found the visibility to be poor at around 2 to 3m. As they explored the wreck they reached a maximum depth of 39m. Whilst at that depth the diver became disoriented and spent some time looking for his two buddies and felt afterwards that he had been suffering the effects of narcosis. The diver had felt the separation lasted a couple of minutes but actually constituted around 6 min. The diver also missed checking his computer and had not noticed it going into required decompression stops. On realising the error of the incorrect settings for their computer the diver checked with the third diver who had correctly set their computer and found they had just reached the end of their no stop time. A gas check indicated that the diver had 100 bar and the others had 130 and 140, and so the diver indicated they should head back towards the shotline rather than deploy a DSMB for ease of conducting their required stops. As they tried to work back towards the shotline the current was making it difficult and so it was decided to deploy a DSMB instead. The diver deployed his DSMB and then handed it to his buddy to reel up as previously agreed. During the ascent the buddy started to have difficulties with her buoyancy and tried to stabilise herself by grabbing onto the diver. Both then got entangled with each other with either the diver's arm or his BCD inflator entangling the buddy's regulator. The pair ascended to 7m and then descended back down to 15m to meet the third diver. The diver then positioned himself off to the side to avoid further entanglement but had not corrected his own buoyancy properly and ascended to the surface after 90 sec missing 10 min of indicated decompression stops (the dive buddy with the correct setting indicated 2 min stops). The diver swam clear of the DSMB and was picked up by the dive charter boat and placed on oxygen and monitored whilst the other divers surfaced. After around 10 min the diver developed some pain in his arm and after all divers had been recovered the boat headed back to harbour. The boat skipper contacted the local hyperbaric chamber for advice and he was advised to take the diver to the chamber for



assessment. The diver was given a precautionary recompression treatment. A follow up medical examination advised that the diver should not dive for 28 days but no further treatment was necessary.

**September 2018**

**18/318**

A student completed all training dives for an open water course over a weekend without displaying any unusual signs of symptoms. After the weekend the student was treated for DCI at a recompression chamber. The Instructor and dive centre only became aware of her treatment several weeks later.

**September 2018**

**18/312**

A diver was in a group of 10 divers on a 3 day diving holiday. The group completed 2 dives a day. Maximum depth of dives for the trip was 19m with the shallowest dive 7m. Average depth for the trip 14m. After the last days diving with a maximum depth for the final dive of 15m, the group started their journey home, 1330 hours. On the way home, approximately 5:15pm, the diver called the trip organiser complaining of a racing heart rate, stomach cramps and tingling in their thighs. The diver was put in the trip organiser's car and given oxygen. The trip organiser contacted the Emergency Services for advice and continued to administer oxygen for 30 min. The casualty was taken to the hospital at 0830 hours the next. The casualty was evaluated and received treatment in a recompression chamber, over the next 3 days.

**October 2018**

**19/006**

A diver and his buddy carried out two shore dives the aim of which was depth progression for the buddy. On the first dive they reached a maximum depth of 30m with a dive duration of 29 min. After a 2 hour surface interval they carried out a second dive, with the buddy using air and nitrox 32, to a maximum depth of 35m with a dive duration of 29 min. Both dives were completed without incident although the buddy was reported to be concerned as he looked away into the deep but was otherwise happy and enjoyed the dives. The pair left the dive site 45 min after finishing the second dive and drove home which involved travelling up a hill road to a height of 270m around 55 min after the last dive. During that evening the buddy reported to the diver that he was suffering from nausea and vertigo and the diver gave him oxygen with 5 min breaks every 30 min on the way to a recompression chamber. The buddy was diagnosed with vestibular DCI and received four and three quarter hours of recompression treatment.

**October 2018**

**19/042**

A Coastguard rescue team were tasked to meet a dive boat as it came alongside in a harbour. A diver aboard was suffering from a skin rash and shortness of breath after a 38 minute dive. He was placed on oxygen and then transported to the local hyperbaric chamber by ambulance. (Coastguard report).

**October 2018**

**19/007**

A diver experienced in drysuit diving and her buddy, who although having done 200 dives, had never used a drysuit or dived in cold water, carried out two dives on the Saturday of a dive trip to a maximum depth of 12m to practise drysuit skills. Basic skills such as mask clearing and regulator retrieval were also carried out. The plan on the Sunday was to carry out a wreck dive in a non-tidal area

suitable for recently qualified divers with a depth limit of 20m and maximum dive duration of 45 min. The diver, who had dived the wreck before, and her buddy entered the water from a RHIB with the diver wearing a computer and her buddy carrying a torch and DSMB but no personal means of monitoring depth. Their plan was to make it back to the shotline but should either reach 70 bar then the diver would deploy the DSMB. The diver thought her computer was not registering depth as they began their descent so they re-surfaced, her computer was checked and confirmed that the diver had not gone deep enough for it to register. The pair re-descended and the computer began to register. They descended the shotline to the wreck's bow and moved towards the stern with the buddy using his torch and intermittently asking to see the diver's computer to check his depth. She closely monitored this throughout the dive and they spent most of the time between 15m to 20m. When they reached the stern they turned around and the diver checked her buddy's air which was at 100 bar. At around 35 min the buddy made the diver aware he had 70 bar and, with the shot some distance away, they agreed to ascend using the DSMB. The diver dumped air from her BCD to sit on the wreck and use a vertical pole as a hand hold. The buddy remained mid-water and handed her the DSMB whilst he held onto the reel. When the diver removed its protective cover, she noticed the bottom opening was stuck together and her impression was it had not been used before. She tried to separate the opening's edges, the buddy attempted to put air in and they tried to attract the attention of passing divers for help but were unsuccessful. The diver managed to ease the opening apart, held onto the upright pole as she used her octopus regulator to put some air into the DSMB and her buddy remaining mid-water holding the reel. The diver felt some resistance from the DSMB although it was not filled with a lot of air and she let it go. The DSMB began to rise quickly and the reel unwound. The diver noticed a lot of excess line and was about to indicate to her buddy to reel this in when she saw he was rising so grabbed onto his leg to hold him down but now they were both ascending. The buddy had no way of checking his depth as he had no dive computer but realised his ascent was uncontrolled so began to breathe out and dumped air from his BCD but was unable to dump enough air from his drysuit. At some point during the ascent the diver let go of her buddy to dump air from her BCD but could not slow her ascent. The divers surfaced within 15 sec of each other omitting their safety stop. They had a dive duration of 41 min to a maximum depth of 19m. Immediately after surfacing the divers reported a fast ascent and the buddy experienced a 'tingling' sensation around his chest just below his ribs. The divers were recovered aboard the RHIB and the buddy was immediately put on oxygen. It was noticed while the buddy was de-kitting to get back aboard the RHIB that he had to thread the DSMB line back through his kit as if it had become tangled in one of his hoses. As the RHIB headed back to a marina a hyperbaric chamber was contacted and they said a doctor would call back but, unwilling to wait due to the buddy's condition, a 999 call was made and an ambulance was arranged to meet the RHIB at a marina. The doctor called back and when the paramedics arrived he advised that both divers should be put on oxygen and taken to hospital. At hospital both divers were put on high flow oxygen and seen by a diving doctor. The diver had some neck pain and a headache but thought the neck pain was muscular and it was not unusual for her to have a headache and the doctor agreed. The buddy was taken to the recompression chamber for treatment and the diver remained in hospital on high flow oxygen for another four hours and then both were discharged but told to stay

overnight in the area. The diver still felt unwell throughout the evening with an ongoing headache, neck pain, nausea, slightly irritable and felt fatigued but did not think this unusual in the context of events. In the early hours of the next day she woke up with 'tingling' in her right hand and the diving doctor was contacted. He met the diver at the hospital, put her on oxygen and then the decision was made to give her recompression treatment. During the seven hour treatment the diver vomited and was unwell in the chamber. She was taken back to hospital and given IV fluids but remained unwell. She had not eaten or slept much in the past twenty-four hours and was dehydrated from the oxygen therapy. Her symptoms relapsed during the day and she developed new symptoms such as back pain, 'tingling' in her feet, a feeling like electric shocks down her legs and dizziness. The decision was made by two diving doctors for the diver to undergo another seven hours of recompression treatment that evening but she was still in significant pain. She spent the next twenty-four hours in hospital and her symptoms eased. She was given two more sessions of recompression treatment over the next two days and then discharged with only minor symptoms which proved to be transient. The buddy had been checked by the doctor the morning after the incident but in the afternoon developed an ache in his right shoulder. Following a further check up by a doctor the ache was determined to be extremely mild and he was discharged with a phone number to call in case any symptoms worsened but he was asymptomatic after the discharge.

**October 2018**

**19/023**

A group of 12 divers in two RHIBS carried out a wreck dive. They knew the visibility could be poor having dived another wreck in the same area the previous afternoon. A diver and his buddy, both using air, entered the water but the buddy had problems descending and around 2 kg of weight was attached to his cylinder. The pair descended to 6m where the buddy had trouble clearing his ears. After a couple of minutes he resolved the issue and the pair descended slowly on the shotline taking around 8 min to reach the wreck. During the descent the diver was aware that his buddy was heavy on the shotline. On the wreck at 29m the visibility was at best 2m using a torch and the divers could feel but not see the wreck due to stirred up silt. The buddy said later that he had felt very apprehensive at this point but tried to calm down and slow his breathing. The diver was concerned that the buddy was not very responsive and tried to provide confidence by holding his hand. After a couple of minutes, the diver decided they should ascend and indicated this by holding the buddy's thumb in the ascent signal with the buddy seeming to concur. The diver tried to deploy his DSMB as they had lost contact with the shotline. The buddy had 120 bar at this point. They both tried to swim up but the buddy was not leaving the bottom so the diver abandoned his DSMB and decided to perform a controlled buoyant lift. He held onto his buddy's BCD and put air in his drysuit which flowed straight out through the open dump valve. The diver closed the valve but air still seemed to be venting and they did not ascend. The diver put air into the buddy's BCD and they began to ascend 17 min into their dive time. Because it was so dark the diver could not read his computer until they reached 18m and then realised they were ascending too quickly so dumped air from the buddy's drysuit, BCD and his own drysuit as he was now positively buoyant. With the quick ascent and despite slowing down a little they surfaced in under 1 min from their maximum depth of 29m, omitting a 3 min safety stop at 6m with a dive duration of 18 min. The diver

ensured his buddy was buoyant on the surface, indicated an emergency to the RHIB and they were recovered aboard. Both divers were given oxygen and although shaken neither showed any DCI symptoms. After a few minutes it was decided to take the divers ashore as a precaution leaving the second RHIB to pick up the other divers in the group. The Coastguard was not contacted but the cox'n knew to call 999 or the Coastguard if there were any issues with the divers. The divers stayed on oxygen for around 40 min. The diver did not show any symptoms but the buddy said he had a stiff shoulder and he was kept on oxygen. A diver helpline was called and they recommended that both divers remain on oxygen. After consulting more senior colleagues the incident helpline staff recommended that both divers be taken to a hyperbaric chamber who had advised that the divers come off the oxygen. At the chamber both divers were assessed as suffering from DCI and given around six hours of recompression treatment. They were discharged and told not to dive for five weeks.

**October 2018**

**19/018**

An instructor and two divers carried out two shore dives. The plan for the day was that the instructor would take one of the divers, who had completed her training a couple of weeks before, on experience dives. They were joined by another diver, who although experienced, had not dived for between three to four years due to a variety of reasons including ear problems and felt the dives would be an opportunity to get back in the water as checkout dives and practice. All three used air with the instructor on a 12 lt cylinder and 3 lt pony cylinder and the recently qualified diver using hired equipment including a 12 lt cylinder. The experienced diver was using a 12 lt cylinder and his own equipment with checks having been made on his BCD and drysuit and his regulator and dive computers had recently been serviced. When they kitted up the experienced diver reported a 'hissing' noise which lasted a few seconds behind his head which appeared to come from the first stage but checks could not find the cause. The group entered the water for the first dive and the experienced diver carried out a buoyancy check, struggled a little to submerge but did so and signalled 'OK'. The group swam on the surface to a shotline marking a wreck and the group descended together. They carried out air and buoyancy checks on the deck with the experienced diver fully deflating his BCD to control buoyancy on his drysuit. About 5 min later the diver found he could dump a little more air from his BCD but assumed this had been trapped air. He did not have to dump any more air during subsequent re-checks. The group explored the wreck and moved on to other underwater features. The instructor then led the pair to a wall and after about 19 min checked air and signalled for the group to ascend to around 10m to continue the dive. At 17m the instructor noticed the experienced diver was struggling with buoyancy and approached him to help. Keeping the recently qualified diver close to him he tried to arrest the experienced diver's ascent by holding onto him, flaring his fins and dumped all his own buoyancy. The experienced diver had also flared his fins, dumped air from his drysuit and felt suit squeeze but still ascended. At 10m he inverted, attempted to swim back down but made an uncontrolled ascent and surfaced with a dive duration of 21 min to a maximum depth of 20m. The instructor and other diver surfaced shortly after him and they made a long swim back to shore and exited the water. Checking the experienced diver's equipment there seemed to be an intermittent leak on his BCD's direct feed. After a surface interval of 2 hours 15 min the group carried out a second

dive with a maximum depth of 9m and dive duration of 47 min including a 10 min stop at 3m. The group travelled home and later that evening, about 6 hours after completing the second dive, the experienced diver contacted the instructor to inform him that he had begun to show DCI symptoms and had spoken to another instructor in their dive club who was taking him to a recompression chamber. The diver was given recompression treatment.

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*November 2018*

*19/019*

A trainee and his buddy carried out two training dives from the shore with an instructor. The first dive was to a maximum depth of 9m with a dive duration of 30 min and after a 1 hour 50 min surface interval, during which the trainee kept warm, had fluids and food, the second dive was to a maximum depth of 13m with a dive duration of 30 min. The trainee left the dive site feeling well but about 3 hours later he complained of a slight ache in his wrist. He was advised that if it became worse he should report to a medical centre and call a diver assistance number. On feeling worse the trainee contacted the diver assistance number and was asked to attend a recompression chamber for assessment. The trainee was given recompression treatment, discharged but advised to seek advice from a diving referee before diving again.

## Boating and Surface Incidents

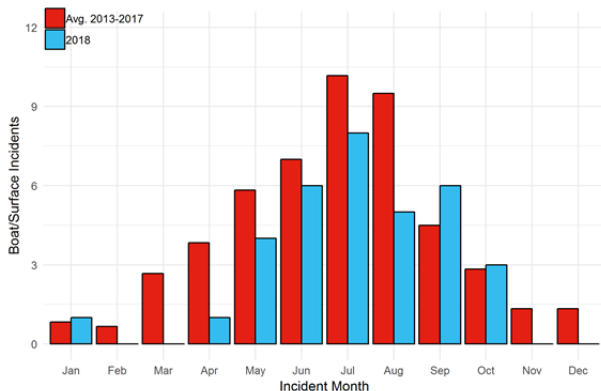


Figure 21. Boating and surface incidents in each month of the year

**January 2018**

**18/037**

The Coastguard received a report from a member of the public concerning two people, thought to be on a raft, waving for assistance near a small island. A lifeboat located the pair, who were in fact on the island, and transferred them to the lifeboat. The pair were two divers who had been diving the morning of the day before but when they had surfaced their RHIB had drifted off in a strong easterly wind. They had managed to get to the small island but all their means of communication were on the RHIB. The pair had managed to gain access to an outbuilding on the island to provide shelter until the following morning when they were sighted. The divers were taken to the nearest harbour and landed whilst the lifeboat returned to the area to search for the RHIB, which was eventually located on the west side of a larger island and was re-united with its owners at the harbour. The lifeboat commented that they would always recommend a policy of having a dive boat manned whilst divers are in the water. The divers had not advised anyone of their intentions so nobody knew they were overdue and no search was carried out when they failed to return. (Coastguard report).

**April 2018**

**18/150**

A dive boat reported a diver being 30 min overdue and lost in fog. The buddy was recovered but had become separated from the diver whilst searching for scallops. After a search involving a lifeboat and a number of nearby commercial vessels, the diver was located safe and well. (Coastguard report).

**May 2018**

**18/236**

The Coastguard tasked an inshore lifeboat and CRT to assist a dive vessel that suffered mechanical failure whilst conducting engine trials. No diving was being conducted. (Coastguard report)

**May 2018**

**18/070**

During the transit of a RHIB from its launch site to a mooring, some equipment in the boat became loose. A crewman attempted to secure it and lost his balance

which resulted in a 'man overboard'. He was wearing a life jacket and was recovered, without injury, by the boat.

**May 2018**

**18/105**

A diver was practicing boat handling with a student on a Diver Coxswain course when he heard a distress call on the radio from the harbour master. The diver responded and travelled to the site of the incident where he found three people in a boat which had run out of fuel. The diver notified the harbour master they had located the boat and they towed it back to its mooring.

**May 2018**

**18/197**

A lifeboat was launched to assist a dive boat suffering from machinery failure. Weather conditions at the time were reduced visibility due to thick fog and the lifeboat proceeded at reduced speed but the vessel was soon located and a tow was established. The lifeboat towed the vessel to safety and then returned to station. (RNLI report)

**June 2018**

**18/184**

A RHIB reported engine failure with all divers safely aboard. A lifeboat was tasked to tow them back to harbour where a Coastguard rescue team met them to provide safety advice. (Coastguard report).

**June 2018**

**18/090**

The Coastguard was contacted by a RHIB on a wreck site reporting an engine failure. Three divers were still in the water. An inshore lifeboat met the vessel now with eight divers aboard, the crew set up a tow and returned the boat with the divers to the safety of a harbour. (Coastguard report).

**June 2018**

**18/186**

A dive boat reported a diver overdue. Three lifeboats, a Coastguard rescue team, a Coastguard rescue helicopter, another dive boat and a warship were all tasked to the search. The diver was located safe and well and then continued with his day's diving. (Coastguard report).

**June 2018**

**18/187**

A dive boat noticed they were taking on water with divers still down and called the Coastguard for assistance. Three lifeboats were tasked to recover the divers and assist the dive boat with the water ingress. The boat was pumped out, the cause rectified and all the divers were recovered safe and well. (Coastguard report).

**June 2018**

**18/190**

A dive RHIB reported engine failure with all divers safely aboard. A passing RHIB offered to tow them back to harbour. (Coastguard report).



*June 2018**18/191*

A charter boat reported two overdue divers. During the call the divers' DSMB was spotted and shortly after they surfaced safe and well. (Coastguard report).

*July 2018**18/192*

A dive charter boat called 'Pan Pan' after suffering engine failure with two divers still in the water. A nearby dive vessel responded to the 'Pan Pan' offering to assist. The boat successfully restarted its engine and recovered the divers without assistance. (Coastguard report).

*July 2018**18/101*

A diver and his buddy carried out a wreck dive from a RHIB. The RHIB was one of two dive boats on the wreck site, the other being a hardboat. The divers descended to 31m and reaching the end of their no stop time, they moved to the top of the wreck at around 25m and 30 min into the dive deployed a DSMB. Before the dive the buddy had asked to practise her mid-water DSMB deployment and the plan was to do this from 10m and ascend to 6m for a safety stop. After ascending for 5 min they were at 12m when the diver felt a sharp tug on his DSMB and before he was able to react he had been pulled up by approximately 3m so he quickly let go of the reel. He saw a large hull passing overhead which was definitely not the RHIB's. After regaining his buoyancy, the diver re-joined his buddy at 12m and she deployed her DSMB. They ascended, completed their safety stop and surfaced with a dive duration of 45 min to a maximum depth of 31m. On the surface they were approached by the hardboat with the skipper holding the diver's DSMB and reel and who jokingly asked the diver if he had lost them. When the diver informed the skipper that his boat had gone over the top of them and pulled the reel from his hand, the skipper reacted angrily and blamed the divers for sending up the DSMB underneath his boat. When the diver told him that this was not the case as he and his buddy were ascending under the DSMB for at least 5 min before the incident took place, the skipper threw the reel and DSMB at the divers narrowly missing the diver's buddy. According to the crew of the RHIB they had seen the DSMB on the surface before it went under the hardboat's hull.

*July 2018**18/193*

A dive RHIB called for assistance after suffering engine failure with no divers in the water. A lifeboat towed them back to harbour. (Coastguard & RNLI reports).

*July 2018**18/194*

A small boat declared a 'Mayday' reporting a missing snorkeller who had been spearfishing. Two lifeboats and a Coastguard rescue team were all tasked to locate the snorkeller. He was located by his boat and reported to be safe and well, but tired. Units arrived on scene to check the casualty over, but it was confirmed no medical assistance was required. (Coastguard report).

*July 2018**18/275*

A lifeboat was launched to a dive vessel adrift and escorted the boat to safety. (RNLI report)

*July 2018**18/195*

A buddy pair conducted a shore dive with the intention of doing a drift dive. They became separated so one searched for 1 min before surfacing and returning to shore. They made a 999 call to alert the Coastguard but during the call the second diver returned to shore and was confirmed safe and well. It was not believed that the diver was carrying an SMB. It was reported that the dive plan had been for the pair to swim into the tide at first before drifting back but the diver reported missing had done the opposite. (Coastguard report).

*July 2018**18/116*

Four divers carried out a drift dive from a boat. They had arranged to deploy their DSMBs after 30 min which they did but the cox'n had thought they were going in a different direction. He was searching for the divers about a mile away and in a different bay. The divers managed to swim ashore which they found quite hard and one of them suffered cramp in his leg. One of the group flagged down a car and rang the Coastguard. A lifeboat was scrambled and confirmed that all the divers were safe and well after making it ashore and they escorted the dive boat back to harbour.

*July 2018**18/319*

A lifeboat was launched in response to a call from a broken-down dive vessel. The dive vessel had been under tow by another vessel, but the tow line had been lost and it was drifting towards the entrance to the harbour, but was unable to cross the bar, due to the low tide and depth of the water. Following a conversation between the lifeboat crew and the skipper of the dive vessel, the decision was taken for the vessel to put down its anchor and wait until a colleague's dive boat was due to return and could then tow the vessel to its moorings. A contact number for the dive vessel was relayed to the UK Coastguard, so the situation could be monitored, and more assistance arranged if required. The lifeboat stood down and returned to the station. (RNLI report)

*August 2018**18/177*

Two divers carried out a shore dive and surfaced, with a dive duration of 45 min to a maximum depth of 14m, approximately 150m from their beach entry point and close to rocks. Despite only being around 2m apart one of the divers was caught in severe wave action caused by the tide and the rocks. She used a significant amount of her remaining air trying to swim out of the affected area but was pushed by the waves into a small cove. Whilst caught by the waves, being thrown around and low on air she gave the 'diver in distress' signal at which point her buddy dumped his weights and swam in to give assistance. Both divers safely exited the water onto the rocks in the cove but there was no safe way on foot out of the cove due to cliffs and large rocks nor was there a safe place to re-enter the water and swim back to the beach. The shore cover notified the Coastguard who sent two lifeboats to assist. One of the lifeboats recovered the divers and took them back to the beach where they were checked by a paramedic but found to be uninjured.

*August 2018**18/276*

A lifeboat was launched to assist a dive boat that had broken down. The vessel was escorted to safety. (RNLI report)

**August 2018****18/139**

A dive boat with one person aboard called for help after suffering an engine failure with a diver still in the water. Two lifeboats were tasked to recover the diver and assist the boat back to shore. The diver was recovered safe and well and the boat towed back to harbour where they were met by a Coastguard rescue team who gave safety advice. (Coastguard report).

**August 2018****18/206**

A Coastwatch station reported a boat that had been empty for 30 min with an A flag raised. During the call a solo snorkeller returned to the boat safe and well. (Coastguard report).

**August 2018****18/207**

A dive RHIB called for assistance with engine failure and three divers still in the water. A local fishing vessel and a lifeboat were tasked to assist. It was realised that the kill cord had come out, so it was replaced and the engine restarted. (Coastguard report).

**September 2018****18/241**

A dive charter vessel reported main steering failure and was now using emergency steering. No divers were in the water, so CG monitored the vessel on its passage back to harbour. It returned alongside with no need for assistance. (Coastguard report)

**September 2018****18/151**

It was reported that a diver had been airlifted from a beach by a helicopter. (Media report).

**September 2018****18/165**

On a late afternoon a buddy pair carried out a drift dive from a RHIB. Their dive plan was to be underwater for around 30 to 40 min and they would deploy a DSMB upon reaching the seabed at 18m. During the descent one of the divers had difficulty clearing his ears and after about 10 min it was agreed they abort the dive. They deployed the DSMB, made a steady ascent and surfaced with a dive duration of 16 min to a maximum depth of 14m. Whilst underwater they had drifted a considerable distance from the RHIB due to the speed of the current and westwards towards the setting sun. The sun's reflection on the water made the divers and their DSMB invisible to the RHIB which was to their east and despite the cox'n using binoculars as well as carrying out an east to west search pattern trying to locate them. The divers deployed a second DSMB at the surface. After about 40 min and unable to locate the divers the cox'n issued a 'Mayday' call. The Coastguard tasked three lifeboats to the scene and one of them spotted the divers as it travelled towards the original dive location. The lifeboat crew commented that from their northerly position relative to the divers they had been easily visible with both DSMBs and the torches signals the divers gave as darkness approached. The divers were recovered aboard the lifeboat and transferred to their RHIB when it arrived and returned to harbour as night fell.

**September 2018****18/248**

A diver was reported 20 min overdue. Multiple dive vessels and a lifeboat were tasked to search for the diver. He was located by one of the dive vessels, and found to have

missed some stops so was taken to the harbour to be assessed by ambulance. (Coastguard report)

**September 2018****18/175**

A buddy pair were about to carry out a RHIB dive. The cox'n was giving the entry briefing procedure to 'go' when he had counted down to three but one of the buddy pair mistook this as the actual drop off instruction and on hearing the 'three' he rolled off the RHIB. He surfaced close to the shot buoy in a calm sea so swam to it and waited for his buddy. The dive continued without further incident.

**September 2018****18/160**

Two dive RHIBs, one with three divers aboard and the other with two, were travelling together when it was reported that a storm blew up and one of the RHIBs broke down in heavy seas with a fuel problem with 4m waves and high winds. The second RHIB tried to tow the broken down RHIB but the tow line broke and whilst trying to cut it free the second RHIB was swamped by a couple of waves, the line floated out and got caught in its propeller. Afraid of being turned over by the waves as well as being swamped a 'Mayday' was issued. Two lifeboats were launched but the skipper of a local ferry heard the distress call and having an idea where the RHIBs were he diverted off-course and found them about half a mile apart. The ferry went alongside the RHIB with three divers aboard who weren't in any immediate danger but were concerned about the other RHIB which was in danger of sinking. The ferry went alongside the second RHIB, managed to recover the two divers aboard, went back to the first RHIB and carried out a similar rescue. The ferry attempted to tow the RHIBs back to port but realised they were in danger of damaging them so left them for the approaching lifeboats who towed them back.

**October 2018****19/043**

A dive boat with engine failure was towed to safety. (RNLI report).

**October 2018****19/044**

A dive boat with engine failure was towed to safety. (RNLI report).

**October 2018****19/004**

A dive RHIB was one of four others on a wreck site with all displaying the 'A' flag. A local lobster fishing boat ran through the group of boats at speed then did a U-turn back through the group again. The RHIB was about to deploy a pair of divers onto a shotline marking the wreck when the fishing boat hit the RHIB moving it out of the way and then proceeded towards another RHIB and either hit that as well or stopped very close to it. The fishing boat then proceeded to pick up its creels and was then seen to pick up the first RHIB's shotline, cut the line, tie the line together again and drop the pieces back in the water. Two of the RHIB's divers were decompressing on the shotline at the time of the incident and moved off it and drifted away for a distance before deploying a DSMB and ascending safely. The incident was also witnessed by a tour boat. The crew on the RHIB at the time were too stunned to report the incident to the Coastguard.

## Ascent Incidents

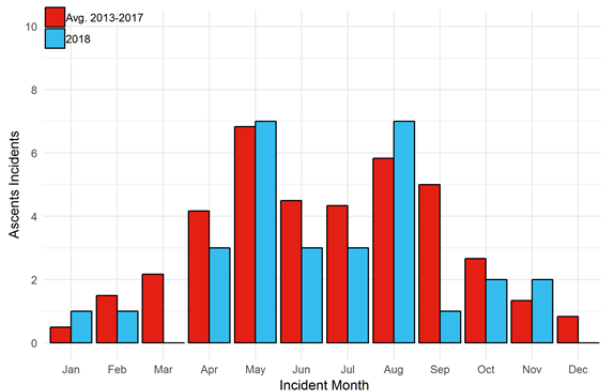


Figure 22. Ascent related incidents in each month of the year

**January 2018**

**18/258**

A group of three divers conducted a dive to a maximum depth of 34m. One of the divers had some problems with their kit and the group started to ascend. Around 26m one of the divers had problems with air trapped in their suit and had a rapid ascent from that depth. The divers were placed on oxygen and a recompression chamber contacted for advice. All three divers were advised to attend the chamber for evaluation.

**February 2018**

**18/213**

A diver experienced breathing difficulty during a dive at an inland site and made a rapid ascent. The diver was advised to attend A&E.

**April 2018**

**18/214**

A buddy pair experienced a rapid ascent during a dive at an inland site. Neither diver suffered any ill effects.

**April 2018**

**18/215**

A diver experienced a fast ascent during a dive at an inland site but suffered no ill effects.

**April 2018**

**18/059**

Three divers had carried out a boat dive reaching a maximum depth of 17m on a wreck and had ascended to 6m to carry out a safety stop. Their boat handler moved the boat upwind of the divers so that it would drift towards them in a few minutes and he turned the engine off. The boat drifted straight towards the group's DSMB and, as the boat handler did not want to turn the engine on, the boat went over the DSMB. Those in the boat moved it around the side of the boat but the diver who was holding the DSMB was pulled up from 6m to 2m. He re-descended and completed the stop with the other two divers.

**May 2018**

**18/262**

A group of seven divers were on a training dive to a maximum depth of 35m. One of the divers had problems with his regulator and was provided an AS by one of the group which had nitrox 32. An ascent was initiated and became rapid from a depth of 25m. Four of the group of divers were placed on oxygen for 30 min.

**May 2018**

**18/091**

A diver and his buddy carried out a shore dive reaching a maximum depth of 20m on a wreck. They headed back to a wall at 20m and noticed that a lot of silt had been kicked up ahead of them. They followed the wall for a few metres and saw two divers standing on the quarry floor. One of the divers summoned the buddy pair over and indicated all was not well. The standing pair were close together with one at the back holding onto the one in front of him. After reaching them the diver in the buddy pair signalled 'OK' to the diver standing at the back to which he responded again something was wrong but did not give an indication of what. When he asked the diver at the front if he was 'OK' he responded with a shrug and a blank stare so the diver in the buddy pair indicated they should ascend. The diver standing at the back then released his weightbelt, held onto the diver in front of him as he inflated his BCD and they started to ascend. The diver and his buddy briefly continued their dive before deciding to abort the dive, ascend and complete a safety stop. They surfaced with a dive duration of 31 min to a maximum depth of 20m. On the surface they saw what they assumed to be the two divers exiting the water.

**May 2018**

**18/085**

An instructor and two students conducted the final boat dive of a CCR course. On the ascent at 16m one of the students deployed his DSMB. When he reached 10m he lost some buoyancy, recovered and then as instructed, changed his PO<sub>2</sub> to 1.4 but was unable to counter the effects of additional gas in his loop and dump gas from his drysuit to maintain a safety stop at 6m. He ascended to the surface with a dive duration of 58 min to a maximum depth of 29m. He signalled 'OK' to the dive boat and watched his buddies from the surface for the next 2 min as they completed the safety stop and ascended.

**May 2018**

**18/068**

An instructor and his trainee carried out a shore dive. It was the trainee's first open water dive and using a drysuit. The trainee needed more weight before he could descend and on reaching 5m he struggled to find his drysuit inflation valve, began to panic and his breathing rate increased. The instructor carried out a controlled buoyant lift and they surfaced with a dive duration of 3 min. Back ashore the pair talked about the incident and the trainee said he had been worried about the drysuit and doing the open water dive. He had got up early the day of the dive but had been out the night before and did not get home until late. He also had hung around whilst his partner carried out her first open water dive in a drysuit but her dive was aborted, due to her feeling everything was too tight, meaning his dive had come sooner than expected. Once in the water the trainee felt he was not in control and afterwards he said he felt he was not as fit as he thought.

**May 2018**

**18/087**

Three CCR divers carried out a boat dive and reached a maximum depth of 30m. The divers had no decompression requirement as they ascended under a DSMB. They stopped at 6m to carry out a 3 min safety stop but after 1

min one of the divers became positively buoyant and surfaced, with a dive duration of 45 min, having omitted 2 min of the safety stop. He signalled to his two buddies that he was 'OK' and remained in visual contact as they completed the safety stop, ascended and surfaced. No rapid ascent was indicated on the diver's computer, he had no ill effects and dived later that day.

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**May 2018** **18/128**

Two CCR divers had carried out a boat dive to 30m and after a surface interval carried out a second boat dive. The maximum depth achieved was 25m on a wreck with a bottom time of 35 min. On their ascent one of the divers deployed his DSMB at 14m and they ascended to 6m to carry out a 3 min safety stop. After approximately 1 min the diver became positively buoyant and ascended to the surface omitting 2 min of the safety stop. Neither the diver's CCR or secondary computer indicated a rapid ascent. The diver was checked on the surface but had no issues following the dive.

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**May 2018** **18/075**

A diver and his buddy carried out an evening wreck dive from a hardboat. Both were using nitrox 32 and the buddy was carrying a 3 lt pony cylinder. The divers descended and towards the bow of the wreck they entered a hole by the seabed at 26m. In the hole the pair agreed to ascend through a small hatch into a compartment above. On entering the compartment, which was approximately 4m x 4m and with no other obvious exits, the pair stirred up the sediment which started to reduce the visibility. The divers exchanged signals to turn round which was difficult in the confined space and they disturbed more silt. They were unable to locate the floor hatch so turned off their torches but no light source from the hatch was visible. The diver took out a spool line to start a search but immediately lost contact with his buddy in the zero visibility and could not give him the end of the line. The diver searched, found the floor hatch, went through, deployed his DSMB through the exit hole in the side of the wreck and took the line back to the hatch and tied it off to a ladder. He ascended back into the compartment and laid a line partway around it and flashed his torch and shouted. He was unable to locate his buddy and assumed he had exited the compartment so left the line in situ, followed it out of the wreck and ascended. On the surface the diver signalled to the hardboat which came over straight away. The diver's buddy had not surfaced so the diver checked his gas which was 100 bar in a 15 lt cylinder. He asked the skipper to check for any spare gas aboard but then decided that time could be critical and told the skipper he would follow the DSMB line down and search again for his buddy. The skipper agreed but cautioned him to return with at least 50 bar. Meanwhile, the buddy had remained stationary for a while but then searched for a way out of the silty compartment. He found an exit in the ceiling, exited the wreck and ascended. The diver had re-descended and back in the compartment he had found another hole in the floor. He was now running low on gas, fearful that the buddy may have exited this way, be stuck and low on gas. He placed a lit torch by the hole and exited the wreck but placed another lit torch on the deck by the top exit from the compartment. The diver ascended, had a rapid ascent warning and his computer indicated 3 min of mandatory decompression stops. He carried out 2 min of the stops but ascended believing he had missed the remaining 1 min, surfaced with a dive duration of 47 min to a maximum depth of 27m, and found his buddy was already back aboard the boat. Because

the diver thought he had missed 1 min of his stops and had carried out a sawtooth profile, he was placed on oxygen as a precaution. He developed no symptoms and realised that he had completed all necessary decompression. As a further precaution a hyperbaric chamber was called who advised the diver be monitored and to call back the following day to ensure no symptoms had developed. The diver remained symptom-free.

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**June 2018** **18/183**

After a boat dive to a maximum depth of 27m a diver using air had a rapid ascent from 6m and surfaced with a dive duration of 33 min. He was placed on oxygen as the boat returned to harbour. When back alongside the diver was met by a Coastguard rescue team and an ambulance and taken to A&E. (Coastguard report).

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**June 2018** **18/083**

A diver, using nitrox 29, and her buddy carried out a RHIB dive. The diver had borrowed a 300 bar 12 lt cylinder for the dive and had reduced her weight by 2 kg as she normally dived on a 232 bar 12 lt cylinder. The pair entered the water and descended a shotline. The diver was aware that she still felt heavy at the start of the dive and had to keep adding more air to her BCD. They reached a maximum depth of 27m and at around 20 min into the dive the diver signalled to ascend as she was uncomfortable with her additional weight. Her buddy deployed his DSMB and they ascended to 6m to begin a safety stop where the diver struggled to maintain her buoyancy and kept sinking by up to 2m. Feeling not only uncomfortable but panicky she added what she thought was a small amount of air to her BCD and made a buoyant ascent, omitting a safety stop, and surfaced with a dive duration of 25 min. The diver was recovered aboard the RHIB and, due to a bad headache, was given oxygen during the journey back to harbour. She suffered no further ill effects.

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**June 2018** **18/107**

A diver and his buddy, both using air, carried out a boat dive and reached a maximum depth of 25m. With 100 bar and at 24m the diver attempted to deploy his new DSMB. It was smaller than his previous one and took less air, the rapid fill meant it shot to the surface with more force and the diver lost hold of it. The diver then deployed his buddy's DSMB but the line on the reel was less than the depth the divers were at with the result that it pulled the diver off the seabed at 24m and he quickly ascended to 18m. There he managed to bring his buoyancy under control and his buddy joined him. The diver's air had dropped to 50 bar and the divers ascended but due to the limited air supply they did not complete deep stops at 12m and 9m. At 6m they began a stop but the diver's air was now 30 bar so he used his buddy's alternate source for a short time but he had under 50 bar left. The diver's breathing became more rapid and the pair made the decision to ascend without completing the stop. The diver surfaced with a dive duration of 37 min with 'slow ascent', 'missed deco stop' and 'SOS' warnings on his computer. On the surface although the diver felt fine he coughed and his phlegm contained a small amount of blood but the coughing stopped after a couple of minutes. He had experienced problems with his sinuses in the past. Back aboard the boat the diver drank lots of water, rested for the remainder of the dive trip and monitored himself. He and his buddy had no other side effects from the dive.



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**July 2018**
**18/108**

A trimix diver, the only one in a diving group using open circuit, carried out a wreck dive from a hardboat. He was using two 15 lt cylinders with oxygen 19, helium 35 and nitrox 26 as a travel gas. He also had a 5 lt stage cylinder with nitrox 76 for the shallower stops. The diver was due to descend the shotline with two of the CCR divers in the group but had a minor problem with one of his regulators which he resolved and followed them down to the wreck about 5 min later. He was breathing nitrox 26 on the descent and switched to trimix at 50m. For the ascent the diver deployed his DSMB at the same time as the two CCR divers and immediately switched to his nitrox 26. He carried out his deep stops and switched to nitrox 76 at 10m and ascended to 5m to carry out 26 min of stops. After 6 min the diver noticed he was drifting into the CCR divers' DSMB lines. They were deeper than him having spent longer on the bottom but as the diver started to fin away from the lines his weightbelt fell off with no warning. Having lost his buoyancy he surfaced with a dive duration of 52 min to a maximum depth of 52m. The diver stayed on nitrox 76 and waved to the hardboat which, having picked up other divers, came and recovered him 4 min later. This was too late for the diver to borrow a weightbelt and re-descend to complete his stops as, according to the helicopter paramedic who later attended the scene, 2 min is the recommended surface time limit. Back aboard the hardboat the diver continued breathing the nitrox 76 whilst other divers helped him de-kit. The hardboat did not have oxygen aboard so two of the CCR divers gave the diver their 3 lt cylinders of oxygen. The diver began to feel 'odd' and asked for a helicopter. The CCR divers noticed the diver was breathing the oxygen too quickly and with the advice to breathe slowly and deeply, the 'odd' feeling gradually disappeared and by the time the helicopter arrived the diver felt normal. The helicopter dropped a paramedic aboard the hardboat as a lifeboat arrived. After assessment the diver was transferred to the lifeboat and he and the paramedic winched aboard the helicopter. The diver was taken to hospital and then a hyperbaric chamber where, with no symptoms, the doctor gave the diver the choice of recompression treatment or to go home and the diver chose to go home. Apart from being tired the following day and on the day after that having an occasional 'tingle' in a finger which immediately disappeared, the diver felt quite normal. As a matter of prudence he decided not to dive again for the next 3 weeks.

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**July 2018**
**18/117**

A diver and their buddy both using air carried out a boat dive with a plan to go to a maximum depth of 35m using nitrox 25 in twin 12 lt cylinders. They descended the shotline to 28m where the diver adjusted their buoyancy but began an uncontrolled ascent from 27m and surfaced with a dive duration of 2 min. Two other divers remained in the water. The diver was recovered by the boat, placed on oxygen and the Coastguard contacted for advice. The Coastguard set up radio medical advice with a dive doctor who felt that no evacuation was required. The diver was advised to call the hyperbaric chamber if any symptoms developed. The diver showed no symptoms but believed the problem may have been caused by their drysuit's inflation valve sticking and continuing to let air into the suit.

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**July 2018**
**18/217**

A diver had a fast ascent from 16m at an inland site. The diver reported to the dive centre that he felt wobbly but was otherwise OK.

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**August 2018**
**18/131**

A buddy pair were part of a group of divers on a hardboat diving trip. Their first dive was a shallow one to around 6m as most of the divers had driven a long way to the venue the day before, some had not dived for a while or were using unfamiliar kit. The buddy pair reached a maximum depth of 6m with a dive duration of 3 min and after a surface interval of 2 hours a second dive was carried out on a wreck. The pair, both using air, descended and the diver reached a maximum depth of 32m with a dive duration of around 30 min. One of the divers incurred decompression stops, missed some of these on her ascent and her computer went into error mode indicating no further diving for 48 hours. Her buddy, who had not gone as deep during the dive did not require stops. The diver was unaware of the problem and did not report it to the dive manager.

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**August 2018**
**18/135**

An instructor using an SMB and two trainees carried out a boat dive. One of the trainees lost control of his buoyancy and subsequently disturbed the silt and mud on the seabed at 20m which further increased the poor visibility and he became separated from the instructor and other trainee. The other trainee grabbed hold of the SMB line and he and the instructor carried out a 360 degree visual search but were unable to locate the trainee. The pair ascended to 15m and carried out a further search to no avail and ascended to 10m where a further search was conducted before they ascended to the surface omitting safety stops. At the surface they were met by the trainee who had ascended approximately 1 min earlier with a dive duration of 11 min to a maximum depth of 20m. The three divers were recovered aboard their dive boat.

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**August 2018**
**18/153**

A diver and his buddy, both using air, carried out a wreck dive from a dive boat. After 30 min on the wreck the diver deployed his DSMB and they began their ascent from 24m. The diver signalled to his buddy to hold onto the DSMB line but she continued to ascend on her own towards the surface from around 15m and out of reach of the diver. The diver continued his ascent and made a safety stop at 6m. Whilst on his safety stop he did not realise his buddy had surfaced and then re-descended to him at 6m. Surprised to see her he immediately got her to hold onto the DSMB line and they exchanged 'OK' signals. The diver assumed that they had become separated and the buddy had re-established contact to carry out the safety stop. He checked her air and signalled for her to show him her computer, which she was reluctant to do so. Although they had carried out the same dive profile he saw that she had accrued 7 min of decompression time, 3 min of which were a safety stop. The diver completed his 3 min safety stop and stayed with the buddy whilst she completed her decompression and safety stop. They ascended and surfaced with a dive duration of 36 min to a maximum depth of 26m. Back aboard the boat the buddy informed the diver that she had ascended to the surface without a safety stop, had seen the diver's DSMB and re-descended to him at 6m. The buddy was monitored during the journey back to shore and advised not to dive again that day.

**August 2018** **18/205**

A dive boat reported two divers had made a rapid ascent from 16m. However, neither diver was presenting symptoms. Both were closely monitored by the dive manager and advised to call if any symptoms presented. Both went home with no problems. (Coastguard report).

**August 2018** **18/172**

A pair of divers, both using air, carried out a planned decompression dive on a wreck and at the end of the dive they both deployed DSMBs. One of the divers surfaced with a dive duration of 34 min to a maximum depth of 29m but had missed 3 min of decompression stops due to a buoyant ascent. The diver was recovered aboard the dive boat and his computer checked which indicated the missed stops. The dive manager put the diver on oxygen and called a doctor for advice who recommended monitoring the diver and taking him to a hyperbaric chamber to be assessed. The diver's buddy surfaced having completed his decompression stops. The diver was not displaying any symptoms of DCI and when he and his buddy were taken to the chamber they were examined and given the all clear.

**August 2018** **18/216**

A buddy pair experienced a rapid ascent during a dive at an inland site. Neither diver suffered any ill effects and were advised not to dive again the same day. The advice was ignored.

**August 2018** **18/269**

A pair of divers conducted a dive to a maximum depth of 22m and were following an anchor chain in poor visibility when they became low on gas and ascended to the surface a bit faster than they would have liked. As a precaution the pair were placed on oxygen.

**September 2018** **18/224**

A diver lost their weightbelt at a depth of 25m and made a fast ascent to the surface but suffered no ill effects.

**October 2018** **19/035**

A pair of divers carried out a shore dive during which one of them felt dizzy, disorientated with bad depth perception and made a fast ascent from 20m. He surfaced with a dive duration of 15 min to a maximum depth of 21m. The diver was put on oxygen.

**October 2018** **19/011**

A diver and his buddy, both using air, carried out a drift dive from a boat. They reached a maximum depth of 32m and after approximately 38 min during a normal ascent to 5m the diver was unable to control his buoyancy. He made a slow ascent to the surface with air trapped in his BCD. Once on the surface the diver was able to dump the air and descended to 6m and completed 4 min of safety stops. The divers surfaced with a dive duration of 41 min and were recovered aboard the boat without further incident.

**November 2018** **19/025**

A diver, using nitrox 29, and his buddy using air carried out a dive and reached a maximum depth of 30m. Towards

the end of the bottom phase of the dive and as both divers approached 110 bar the diver indicated that they should deploy a DSMB. The diver deployed his and waited for his buddy to do likewise. The buddy was inexperienced in diving UK waters with the cold and poor visibility and her DSMB deployment took longer than expected. The pair ascended to the 3 min safety stop at 6m and the diver checked his buddy's gas and was informed she had 30 bar. The diver immediately signalled for the buddy to switch to her pony cylinder, they completed the safety stop and surfaced with a dive duration of 31 min.

**November 2018** **19/024**

During a diving course an instructor using nitrox 27 and his student using air carried out two shore dives. The first dive was to a maximum depth of 12m with a dive duration of 35 min and after a 1 hour 18 min surface interval they carried out a second dive. The student was practicing DSMB deployment and as he inflated the DSMB his alternate source regulator began to free flow. The diver let go of the DSMB and the instructor attempted to stop the free flow. It was apparent that the purge diaphragm had jammed open and the instructor, unable to resolve the free flow, provided his alternate source regulator to the student. They made a controlled AS ascent taking approximately 3 min to ascend from 12m to the surface. Their dive duration was 17 min having reached a maximum depth of 13m. The instructor orally inflated the student's BCD and they swam a short distance to exit on the shore. Back on shore the regulator was checked and the diaphragm continued to jam when the purge button was pressed.

## Technique-related incidents

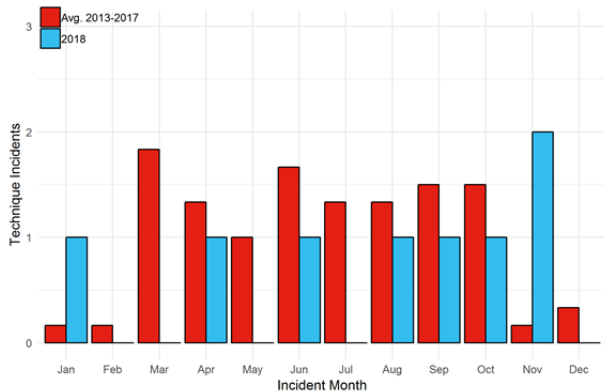


Figure 23. Technique-related incidents in each month of the year.

### January 2018

18/035

A buddy pair using air carried out a winter shore dive to search for a spare torch that had been lost a few weeks earlier. After about 15 min and at 23m they became separated. One diver completed a 360 degree look around, waited a minute and whilst still looking around, slowly ascended and completed a 3 min safety stop at 6m before surfacing. The surface cover immediately saw the lone diver, checked he was 'OK' and informed the dive site staff. His buddy had also carried out a 360 degree look around but rather than surfacing he made his way underwater ascending along the way towards the exit point. The surface cover could see bubbles which appeared to be those of a lone diver but was unsure. Other divers were about to enter the water but were stopped to allow further offgassing on the surface and were asked to be ready to search if necessary. After a period of 2 min the site staff decided to drop a thunder flash to raise all divers and those in the immediate vicinity did so except for the missing buddy. The surface cover and the diver who had surfaced tracked a set of bubbles which ended at the exit point when the buddy surfaced and signalled he was 'OK'. He surfaced with a dive duration of 33 min to a maximum depth of 24m and had completed a 3 min safety stop at 3m. The site staff explained to the buddy the error of his ways and he apologised profusely to all concerned.

### April 2018

18/261

During a pool training session, a student replaced her regulator upside down, swallowed water and went for the surface of the 4m deep pool. The student complained of her chest feeling tight, was very tearful and apologetic. The student was placed on oxygen for 5 min and once she had calmed down continued with her training without further problems.

### June 2018

18/307

A student on a training course ran out of air midway through her safety stop at 5m. The student signalled out of air and a trainee Divemaster provided an alternate air source. On the surface the trainee Divemaster and the student were struggling to stay on the surface, as both were negatively buoyant. The student had removed the alternate air source. The trainee Divemaster could not

remove the casualty's weightbelt because it was stuck under the casualty's BCD. The casualty and the trainee Divemaster were unable to inflate the BCD orally. The instructor then provided the student with their alternate air source and managed to orally inflate the BCD.

### August 2018

18/267

An instructor conducted a training dive with 2 students. One of the students' dive computer was set to a more conservative setting than the instructor and other student and on surfacing was displaying caution as missed required decompression stops. The other two divers' computers were both fine. The student was placed on oxygen as a precaution.

### September 2018

18/271

A student was on a training dive to a maximum depth of 6m when she got water in her regulator and panicked, lost her regulator and surfaced after a total dive time of 5 min. The diver was placed on oxygen and advised not to dive again that day.

### October 2018

19/017

A diver and his buddy carried out a wreck dive from a boat and descended the shotline. At 30m they realised that the shot was not on the wreck so the diver attached a distance line to the shotline to begin a circular search. While he was doing this his buddy swam a small distance away to try and find the wreck. The diver swam out to the limit of visibility from the shot and flashed his torch at his buddy and thought he got a response. He then started the search and found the wreck. At this point he noticed that his buddy was not visible and having relocated the shot onto the wreck he deployed a DSMB and ascended. The buddy had realised they were separated and looked around for about a minute before he also deployed a DSMB and surfaced. Both divers, having reached a maximum depth of 30m with a dive duration of 15 min were recovered aboard the boat and were fine.

### November 2018

19/021

Three divers, all using nitrox 27 with nitrox 50 decompression gas, following a first dive and a surface interval of 1 hour 30 min, carried out a boat dive. They descended a shotline to a wreck after completing bubble checks, gas checks and ensuring all their regulators were working. At the bottom of the shotline one of the divers ensured the shot was clear to be pulled up by the boat skipper. On completing this task, the diver signalled the direction of travel to the other two and they all moved away from the shotline. Due to the poor visibility and dark conditions the diver turned after a few metres to ensure they were all still together. One of the divers could not be seen and after approximately a minute of searching for her with torches and retracing their movements the pair of divers ascended under a DSMB and omitted the safety stop. They surfaced with a dive duration of 9 min to a maximum depth of 19m, saw the separated diver's DSMB and she surfaced approximately 1 min later. Due to the depth of the dive it was aborted and all the divers were recovered aboard the dive boat.

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*November 2018*

*19/022*

Two divers, one using a rebreather and the other air, carried out a boat dive. The surface cover saw their SMB moving to their planned ascent point when a DSMB surfaced some 15m away from the SMB indicating a separated pair. The air diver surfaced followed by the rebreather diver approximately 1 to 2 min later. Their dive duration was given as 37 min to a maximum depth of 14m where the separation had occurred. Both divers indicated they were well and recovered aboard the boat. They reported that they had closely monitored all stages of the dive but a momentary lapse in observation in the low visibility resulted in the separation.



## Equipment

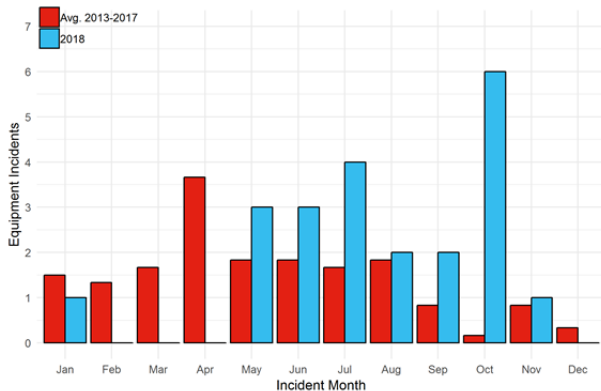


Figure 24. Equipment related incidents in each month of the year.

### January 2018

18/036

A diver using a 12 lt cylinder of air and his buddy using a CCR carried out a shore dive. Almost immediately after descending and at 7m the diver noticed air escaping from either the exhaust valve or the swivel joint of his primary regulator. The diver also noticed that the air pressure seemed to be higher than normal. He removed the regulator from his mouth to carry out a check and it immediately went into free flow. The diver adjusted the flow rate to a minimum, tried to remedy the free flow but was unsuccessful. He checked his remaining air, depth and time, which was now around 10 min, and decided to abort the dive in order to remedy the situation on the surface. Both divers surfaced and with his buddy's assistance, they closed and re-opened the cylinder valve which resolved the free flow problem. The divers signalled 'OK' to their shore cover and with 150 bar left in his cylinder and both happy to continue the dive, the pair descended and completed their dive to a maximum depth of 16m with an overall dive duration of 75 min. Later testing of the regulator indicated that its inter-stage pressure may have been set too high.

### May 2018

18/094

A diver using air had carried out a shore dive to a maximum depth of 21m with a dive duration of 30 min. He carried out a second dive with his buddy, who was using a CCR, and they descended to a maximum depth of 35m. The diver checked his air, which was 200 bar in a 15 lt cylinder and the water temperature was 6 deg. At around 10 min the divers began their ascent but 1 min later the diver had a regulator free flow. The diver signalled to ascend and was assisted by his buddy. They made a controlled ascent with the diver breathing off the free flowing regulator and not panicked as he remembered his training and knew that his buddy was carrying a bailout 12 lt cylinder of air. The divers surfaced with a dive duration of 15 min. The free flow stopped on the surface with 50 bar left in the diver's cylinder.

### May 2018

18/084

An instructor and two students carried out a wreck dive from a boat, which was the third dive of a CCR course. They had conducted skills including bailout and diluent flushes and after each drill the oxygen, diluent and bailout

contents were checked. One of the students had completed a skill and returned onto his CCR with what was seen as 150 bar on his diluent gauge. The instructor was conducting a skill with the other student when the first student indicated he was not happy. He had switched to his bailout cylinder, signalled that his auto and manual diluent valves did not seem to be working and on inspection his diluent gauge read zero. The instructor and student double checked the diluent valve on the cylinder which was open. The group conducted a bailout ascent and carried out 3 min of stops at 6m. The student who had the diluent problem went back onto his loop and used the manual oxygen valve to reset the unit's set point to 1.5 and continued the ascent. Within 1 min the CO2 alarm was set off and he went back onto his bailout. The group surfaced with a dive duration of 60 min to a maximum depth of 18m. When the cylinder contents gauge was checked it showed empty. Regular checks of content had been conducted throughout the dive and the students had confirmed a similar content level of approximately 150 bar before the incident. No obvious leaks were seen nor was it apparent the first student had been exhaling through his nose or venting excessive gas at any point. It was found that the diver had a flooded canister.

### May 2018

18/069

Two divers, using trimix 20/31 and nitrox 50, carried out a wreck dive from a boat. They descended the shotline to the wreck and at 20m the visibility was about 7m but at 50m, their maximum depth, it was 1m. The divers decided to use a distance line from the shot as they needed to return to it for their ascent as briefed by the dive manager. They stayed on the wreck close to the shot because of the limited visibility but at 17 min they returned to it. The dive plan was not to exceed 28 min time to surface but trying to recover the distance line caused a 'silt out' which delayed them leaving the bottom by 2 min. One of the divers was running two computers, both with reduced gradient bubble model (RGBM) algorithms but different versions. They ascended and at 27m the diver's computer algorithms began to contradict each other. One wanted the diver to carry out deep stops whilst the other had a moving ceiling considerably slowing the diver's ascent. The slow ascent indicated by this computer added additional decompression penalties to the other. The divers completed their decompression and surfaced 7 min over the planned dive time of 50 min. Although overdue, their boat cover was able to observe their bubbles throughout the ascent. Back on shore the computers were downloaded which allowed the differences in dive profiles to be ascertained. It was a surprise to the divers that two technical computers from the same manufacturer had significant differences.

### June 2018

18/081

A group of three divers, one using a CCR and his buddies on open circuit using air, carried out a freshwater shore dive primarily to wash salt off dive kit following a week's sea diving and for 'light entertainment'. The group descended to 20m where the buddies inflated an inflatable Star War's character, the CCR diver photographed the activity before the group continued and reached a maximum depth of 35m. The visibility was poor, it was dark and the group made a navigation error by circling around rather than taking a straight line to their

next waypoint. Throughout this the CCR diver had issues with his mask and, with the navigation error, the group ascended. During the ascent and at 25m the CCR diver switched his backup open circuit computer from air to nitrox 32, checked his contents gauge and became aware he had used almost all of his diluent. He was not particularly worried just annoyed at his incompetence. At 20m he was still dealing with mask issues and it occurred to him that this had the makings of an incident. Having decided he was being foolish especially if he had no diluent for mask clearing, loop flushing or bailout he decided to plug in the bailout cylinder but did not consider he needed to go onto open circuit. Initially he was unable to find the end of the bailout whip but managed to do so by undoing the rear clip of the bailout cylinder, he located the diluent manual inflate and released the onboard quick release fitting. At this point one of his buddies appeared and wanted to help, they exchanged signals by which time the CCR diver had now flooded his mask completely. After an 'OK' from the buddy, the CCR diver attempted a manual diluent inject but realised the buddy had reconnected the hose he had just disconnected. He stopped, undid the hose and connected the bailout whip. He completed a loop flush, mask clear, double checked the handset, reconnected his bailout cylinder to a rear D ring and checked on both buddies who looked very confused. At this point the CCR diver signalled to ascend and one of the buddy pair deployed their DSMB. The group ascended during which the other buddy's computer had a deep stop warning so they carried out a 1m stop at 15m where the CCR diver deployed his DSMB. The group ascended to 6m and carried out 8 min of decompression as they made their way underwater to their exit point. The group surfaced with a dive duration of 44 min. The CCR diver admitted that his frequent mask clearing should have warned him to check his diluent contents gauge.

**June 2018**

**18/118**

An instructor and student both using air carried out two shore training dives. The first dive was to a maximum depth of 25m with a dive duration of 35 min including a 3 min stop at 6m. After a surface interval of 1 hour 30 min they carried out a second dive. They descended a cliff to a wreck where the student attached his DSMB reel to a rail on the wreck at 18m and deployed the DSMB using his alternate source regulator. The regulator went into free flow and the diver was quickly losing air. The instructor donated his alternate source, they abandoned the DSMB and made an alternate source ascent and surfaced with a dive duration of 17 min to a maximum depth of 20m. At the surface the instructor turned the student's cylinder off and then on again which stopped the free flow. They finned back to the shore and other members in their dive group retrieved the DSMB and carried the instructor's and student's kit back to their cars to ensure they were not over-exerted. Later investigation showed that the regulator's venturi had been moved to the positive position making it very sensitive. The divers suffered no ill effects following the dive.

**June 2018**

**18/264**

A pair of divers had dived to a maximum depth of 22m and were making their way back to shore underwater. As they reached a depth of 11m one of the diver's regulators free flowed and the pair ascended to the surface. The on-site team administered oxygen to both divers and advised no further diving that day and they should remain on site for a couple of hours before travelling.

**July 2018**

**18/106**

Two divers, one using air and the other a CCR, carried out a Rhib dive and reached a maximum depth of 24m. On the ascent at the first decompression stop the air diver realised he had not turned off the nitrox 54 mix in his computer. The diver had decided to leave his stage cylinder on the boat shortly before the dive but had not changed his computer setting which therefore indicated incorrect time to surface. He informed his buddy and they carried out a 14 min stop at 6m. The result was that they surfaced with a dive duration of 72 min, 12 min over their planned dive time of 60 min. Their boat cover was concerned when their dive time was exceeded but was able to monitor them over the side of the Rhib at their 6m stop.

**July 2018**

**18/112**

An instructor and a trainee carried out a shore training dive with a dive duration of 30 min to a maximum depth of 8m. Their second training dive was to a maximum depth of 10m but at 7m one of the pair had a problem with her regulator and was given her buddy's alternate source. They aborted the dive, made an alternate source ascent and surfaced with a dive duration of 25 min.

**July 2018**

**18/164**

Following a buddy check a pair entered the water from a dive boat and carried out a dive reaching a maximum depth of 18m. The pair ascended and carried out a 3 min safety stop at 6m and surfaced with a dive duration of 33 min. At the surface one of the divers tried to inflate her BCD and found the air was emptying into the sea. The inflator button fitting had become disconnected from the hose. Unable to inflate her BCD the diver tried to inflate her drysuit but air was escaping via the cuff dump valve. She could not keep her head fully above the surface and noticed that one of her fin straps had come off and the fin in danger of falling off. The diver tried to sort the fin strap out and signalled to her buddy for help but unable to get her mouth above the water could only do this with signals and he did not appear to understand. The diver found she was descending and unable to put air in her BCD desperately tried to inflate her drysuit again but she struggled to get to the surface. The buddy heard a shout from the boat's skipper that the diver had gone down. He looked over his shoulder and saw that she had disappeared. He dumped all the air from his BCD and dived down to his buddy who was about 2m below him. By the time he reached her she was at about 5m and struggling with her fin. He grabbed the diver and carried out a controlled buoyant lift, surfaced and kept her buoyant until they were recovered aboard the dive boat. The inflator unit had been replaced a couple of years earlier and there was some doubt as to whether it was the correct one as it fitted into the hose by a very short margin, was held in place by a tie zip but did not abut correctly with a ridge in the hose designed to hold it in place.

**July 2018**

**18/266**

A diver and her buddy were swimming out on the surface to a marker buoy. On arrival at the buoy the pair stopped to rest and the diver started to sink. Her buddy put air into her suit and the diver held onto the buoy. Her buddy then removed her integrated weights and it was discovered that her BCD wouldn't hold air and was leaking from the dump.

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**August 2018**
**18/129**

A diver had purchased a new CCR directly from the manufacturer in preparation for a training course. The oxygen cylinder arrived without oxygen clean stickers so was submitted for cleaning at a local dive shop. The diluent cylinder was taken to be filled and subsequently used to demonstrate an oxygen analyser to trainees. When the diver collected the oxygen cylinder he was informed that its pillar valve was found to be insufficiently tight when the cylinder had been put in a vice to remove the valve. The cylinder was cleaned, the valve refitted and the diver was advised to check the diluent cylinder. When he slowly vented the diluent cylinder he found he could remove the pillar valve by hand with minimal effort so took this to the dive shop to be tightened. The diver emailed the manufacturer to inform them of the situation in case any other cylinders were affected.

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**August 2018**
**18/268**

Following a previous dive to 6m with a total dive time of 20 min a student on a training course with an instructor conducted a dive to a maximum depth of 17m. Close to the maximum depth she experienced her mask filling with water and felt slight panic and breathlessness. The pair ascended to 6m and started to conduct a safety stop, during which her mask filled again. The pair completed their 3 min safety stop at 5m and ascended to the surface. The diver on surfacing was breathless and complained of a dry throat and was given oxygen and advised not to dive again for 48 hours.

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**September 2018**
**18/171**

A diver and his buddy, both using CCRs, carried out a boat dive. During the dive the diver felt a leak in his drysuit, checked his zip and asked his buddy to also check. No problem could be seen and the pair continued with their dive but with the leak getting worse the diver signalled to abort the dive. The pair ascended and surfaced with a dive duration of 38 min to a maximum depth of 25m. When the drysuit was inspected it was found that the zip material had failed.

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**September 2018**
**18/173**

A diver had assembled, calibrated and completed positive and negative pressure checks on his CCR unit. He carried out a buddy check, entered the water from a RHIB and when he surfaced he took a breath and swallowed water. The diver immediately signalled to his buddy who saw that the scrubber to inhalation 'T' piece hose was detached. The buddy secured the hose and the diver was recovered back aboard the boat. On inspection some water had entered the breathing loop and scrubber. The diver admitted to being distracted whilst preparing his unit and had not screwed the hose to the 'T' piece but just pushed the two together. This had enabled the positive and negative pressure checks to be completed but the force of rolling back off the RHIB had caused the hose to separate.

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**October 2018**
**19/001**

A diver and his buddy carried out a shore dive using air to a maximum depth of 15m. They completed a 3 min safety stop at 6m and the buddy successfully deployed a DSMB using his octopus regulator. Both divers noticed that the octopus regulator was free flowing and were unable to resolve the problem. The buddy checked his cylinder

contents gauge, saw the pressure was dropping from around 100 bar and took the other diver's alternate source regulator. He began to switch onto this from his own regulator and was briefly interrupted by the diver moving which pulled the alternate source regulator from the buddy's hand. Once settled breathing was established on the diver's alternate source regulator, the pair made their ascent and surfaced with a dive duration of 55 min. At the surface the buddy orally inflated his own BCD and they exited the water. The free flow had stopped during the ascent with the buddy's cylinder showing empty. Back ashore the divers felt well but a little surprised at the free flow from the little used, approximately 40 year old, regulator which had not caused any concern when checked on dives undertaken two months earlier. The regulator was to be tested in a pool and, if there were any concerns, be serviced before using it again.

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**October 2018**
**19/008**

A diver and his buddy carried out a wreck dive from a boat but as they descended the diver's rebreather CO2 alarm sounded at 6m. The dive was aborted, he ascended on his bailout and they surfaced with a dive duration of 2 min. When the unit was stripped down there was no obvious cause. The unit was rebuilt with extra grease on the O ring above the scrubber. The next dive was incident free.

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**October 2018**
**19/009**

A diver and his buddy, both using rebreathers, carried out a boat dive to a wreck with a maximum depth of 36m. Towards the end of the dive and at a depth of 30m the diver had an O2 cell failure warning on his rebreather. The diver carried out a diluent flush which did not resolve the problem and the pair agreed to abort the dive and ascended. They surfaced with a dive duration of 36 min to a maximum depth of 36m. Back aboard the dive boat the diver recalibrated the system and found that cell 2 was not functioning correctly. The cell was replaced, the system was recalibrated and worked correctly. No further incidents occurred with the unit.

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**October 2018**
**18/321**

A DSMB with no markings or contact details was lost by a diver who had been diving from a charter vessel. The loss was not reported to the Coastguard. The following day the Coastguard received a report of a DSMB floating in a bay with no sign of any divers or dive boats in the vicinity. (Incident number 19/041) Investigations were conducted whilst a lifeboat and a Coastguard rescue team were all tasked to search for a possible missing or overdue diver. The investigations subsequently linked the DSMB found that it had been lost by the diver the previous day and that all divers were safe and well. (Coastguard report).

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**October 2018**
**19/010**

A diver and his buddy carried out a boat dive. The diver was using trimix 18/35 and carried a nitrox 50 decompression mix and his buddy was on a CCR with trimix 18/10 and carried an air bailout and a nitrox 47 decompression bailout. They reached a maximum depth of 44m on a wreck and on the ascent at 17m the diver conducted a gas switch to the nitrox 50 as planned but experienced a wet breathe and switched back to his main gas. On inspection all seemed fine with the second stage regulator so a second attempt was made to switch but this was unsuccessful. The buddy handed her nitrox 47

decompression stage cylinder to the diver who adjusted his computer to the new gas. The divers completed their ascent and decompression stops for 1 min at 12m, 2 min at 9m, 4 min at 6m and 10 min at 3m with no further problems and surfaced with a dive duration of 67 min. Back aboard the boat the second stage regulator was inspected and its diaphragm under the exhaust vents was found to be folded back on itself. The regulator was less than a year old, had not been stripped down in any way and had worked during the buddy check. It was surmised that pressure on entry may have caused the issue.

thought the regulator had moved so adjusted its position to try again but felt water coming in again and found it difficult to get air when she tried a third time. She felt that trying to purge the regulator may have resolved the problem especially as she had no further difficulties during the rest of the dive. The regulator was to be tested and not used until serviced.

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**October 2018**
**19/026**

A diver and his buddy, both using air, prepared to carry out a shore dive when the buddy indicated he was not happy with his cylinder's positioning. He took off his BCD, adjusted the cylinder, re-kitted and the pair carried out a buddy check with the buddy's air confirmed as 215 bar. They entered the water and descended through seaweed and low visibility with the diver checking on his buddy at least six or seven times. They then finned out to an area with better visibility and followed a slope down. At 19m the buddy found his breathing becoming difficult so grabbed the diver's arm and signalled 'out of air'. The diver held onto the buddy's BCD, donated his alternate source regulator, calmed him down and tried the buddy's primary regulator finding very little delivery of air. At the time the diver reported his main concern was to get his buddy to safety so he did not think to check the cylinder valve. The pair ascended to 12m and checking his buddy was calm they carried out a 2 min safety stop, ascended to 6m and carried out a 3 min safety stop. During this stop the diver checked the buddy's cylinder valve and was able to turn it twice to fully open it. Having made the decision to end the dive they ascended to 3m, carried out a 1 min safety stop and surfaced with a dive duration of 13 min to a maximum depth of 20m. They swam to the shore and exited the water. Once ashore both divers were fine but the buddy reported a slight feeling of dizziness.

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**November 2018**
**19/020**

An instructor and trainee carried out a shore dive. They were accompanied by a qualified diver who had stopped diving for a number of years but had made a few dives earlier that year. It was the second dive of the day for the trainee, the aim of which was for the trainee to lead the qualified diver as her buddy with the instructor observing. The group entered the water and descended to 5m, the instructor indicated for the trainee to take over leading the dive and she and her buddy, followed by the instructor, descended to 20m and began to follow a wall. After 4 min because the trainee had not done so, the instructor checked her air which was 150 bar and then the buddy's air which was 140 bar. When the instructor turned back to the trainee to indicate she should carry on leading the dive she gave an 'out of air' signal. The instructor donated his alternate source regulator, gave both divers the 'Up' signal and carried out an AS ascent with the trainee with the buddy following them up. On the surface the instructor was able to inflate the trainee's BCD and she reported that she had felt her regulator letting in water. The group made their way back to the shore but the trainee wanted to re-descend to carry out more of the dive and, after testing her regulator, found it did not leak on the surface. The group re-descended to 2m and after checking that the trainee's regulator was working and that the buddy was 'OK', they reached 6m where they carried out a 10 min dive and worked on the trainee's skills. After the dive the trainee reported that she had taken a wet breath and



## Illness or Injury Related Incidents

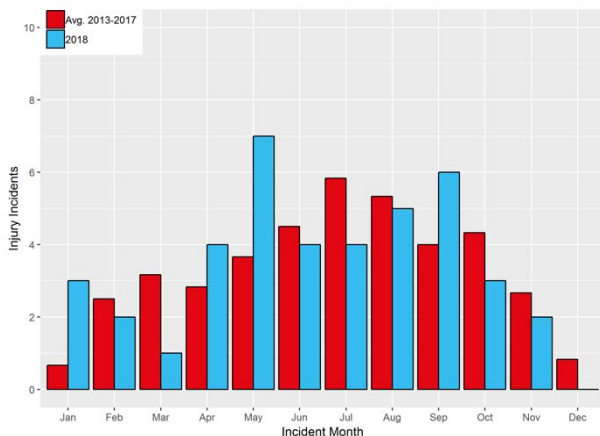


Figure 25. Illness or injury related incidents in each month of the year.

January 2018

18/257

A diver on a CCR training course had completed two training dives without incident. The first to a maximum depth of 6m for a total duration of 60 min and the second after a surface interval of 60 min to a maximum of 15m for 35 min. On surfacing from the second dive the diver started coughing as if he had something stuck in his throat but had no other problems. The diver was placed on oxygen for 10 min during which time the coughing improved.

January 2018

18/259

A diver and his buddy completed a first dive of the day without incident to a maximum depth of 34m for a total duration of 50 min. After a surface interval of 70 min the pair conducted a dive to a maximum depth of 33m for a total dive time of 50 min without incident. On exiting from the dive the diver had stomach cramps and his right leg felt heavy. The diver was given oxygen by the on site staff.

January 2018

18/039

Three divers, one using a CCR and the other two on open circuit air, carried out a winter shore dive with a water temperature of 6 deg. The divers descended to a maximum depth of 24m and spent approximately 20 min at 20m before they made a gradual ascent to 10m and then to 6m where they stayed for at least 25 min stopping at a 6m platform near their exit point. The two air divers practised removal and re-attachment of side cylinders and as the second diver was doing his practice, the rebreather diver, who had been watching, was seen to be head down and descending onto the platform. He was blue in colour, his breathing loop was out of his mouth and he appeared unconscious. One of the two divers took hold of him and carried out an emergency controlled buoyant lift. The dive duration was 55 min. On the surface the diver shouted for help and a member of staff on the site entered the water, de-kitted the unconscious diver and assisted in removing him from the water. On hearing the shouts the site owner sent another staff member to summon the emergency services during which time the unconscious diver was put on oxygen. The site owner gave a minimum of twenty oxygen enriched rescue breaths and

the diver regained consciousness. The emergency services arrived, took over and a doctor who arrived by helicopter deemed that air evacuation was not required and an ambulance took the diver to hospital. Police, who arrived on the scene, isolated and impounded the diver's equipment.

February 2018

18/212

A diver was found to be suffering from immersion pulmonary oedema (IPO) following a dive using a CCR. The diver was evacuated to A&E for treatment.

February 2018

18/209

A diver commenced the first dive of the day and reached a maximum depth of 20m but found he was breathless and he resurfaced with his buddy after a total dive time of 5 min. The diver was brought to the waters edge by his buddy and others assisted him to remove his kit. The diver was checked over by the staff at the dive centre and the diver indicated he would drive himself to hospital. He was however taken to hospital by his partner and he was checked out and informed he had a viral infection.

March 2018

18/045

A snorkel instructor, supported by an assistant instructor, was working with three advanced snorkelling students in a pool. The three students had undergone training for a snorkel life saving exam and on this occasion they wanted to develop their breath holding skills. The students carried out a breath hold on the surface averaging around 2 min. After relaxing for 5 to 10 min and starting from the 2m deep end of a 25m pool, the students started their breath hold dive. Two students completed two lengths of the pool and the third completed one and three quarter lengths. The instructor approached the deep end where the students had finished and saw one of the students, who had completed two lengths, come to the surface. He lifted his head and then re-submerged whilst the other two students were on the surface catching their breath. Looking down into the pool the instructor saw the student face down and sinking to the bottom. The instructor asked the assistant if the student had gone back down for something but when he replied 'no' the instructor asked one of the students on the surface to check if the submerged student was 'OK'. The student did so and with no response he brought him to the surface. The instructor entered the pool and assisted by the student who had carried out the lift, they pulled the unconscious student onto the pool side. The student was blue in the face, unresponsive and not breathing and the instructor immediately carried out rescue breaths. After five rescue breaths the student coughed briefly and began to breathe again. He was placed in the recovery position, monitored and an ambulance had been called. He was unresponsive for just under a minute, within 2 min he was conscious but a little confused and after 3 min he was alert and talking. The student's father attended the poolside and he and the student informed the instructor that the student had recently been investigated for fainting fits and vomiting, similar to possible vertigo, and this also included a slow or abnormal heart rate. This had not been declared to the snorkelling club. The ambulance and paramedics arrived and the student was taken to hospital for observation and kept in overnight. He remembered

completing the two lengths and pushing himself to do so. He also remembered coming to the surface and believed he had got out of the pool when, in fact, he had submerged in a faint. The instructor was informed the following day that the student was doing well and hoped to be discharged from hospital later that day.

**April 2018**

**18/049**

A diver, who had completed over 300 dives but none carried out in the last couple of years, had joined a club with the intention of getting back into regular diving. With this in mind he had just purchased some new equipment and intended to try this out on a pool training night. The diver kitted up and carried his fins as he walked towards the edge of the pool's shallow end. As he neared the edge he slipped, landed on his coccyx and hurt the fourth finger of his left hand. The diver fainted, assistance was immediately hand and support given by a club member who was a full-time paramedic. As the diver was being de-kitted he fainted twice more but was then helped to a bench on the poolside and laid down. The diver had no pain or loss of movement in his left hand but it was agreed he should not drive home and was advised to go to hospital. The diver was taken home by a colleague. When contacted the following evening he confirmed that he had no further fainting episodes although he generally felt unwell and had a headache. He had attended a local minor injuries unit and had tests for heart activity which appeared normal. He explained that on the evening before attending the pool he thought he might have eaten something past its edible date and this had made him queasy. He also disclosed, and thought it might explain his fainting episodes, that he had previously been diagnosed with an iron deficiency and was on medication for this but had stopped taking it a while ago. The diver was going to take further medical advice and was informed that he would need to consult a diving referee before he resumed diving.

**April 2018**

**18/061**

A diver and her buddy, as part of a group of four, were about to carry out a shore dive. The diver was wearing a drysuit, wing BCD and twin-set of air. The group entered the water and were on a platform at 2m where the diver began a weight check. The diver had problems keeping her legs down, began to invert and became distressed. Her buddy went to assist but saw her eyes were glazing over so took her to the surface at the bottom of a ramp and, with the other two divers, yelled for assistance. The dive site's rescue team were quickly on the scene and dragged the diver further up the ramp and out of the water. One of the rescue team arrived with emergency bags, the oxygen kit and a defibrillator. The emergency services had been called and were kept updated of progress. One of the rescue team heard a laboured gasp from the diver who then immediately turned blue and stopped breathing. He and another team member performed rescue breaths and CPR and after two sequences the diver regained consciousness and was placed in the recovery position with oxygen. The rescue team managed to stretcher the diver off the ramp in readiness for the ambulance. The diver was semiconscious with laboured breathing from which it was evident she had breathed in water or had other fluid in her lungs. 10 min later an ambulance arrived and, with fluid in her lungs, they aspirated the diver who recovered to the point where she could sit up and speak coherently but had no recollection of the incident. The ambulance took the diver to hospital and she was discharged the following day after

various tests had been carried out. The hospital found that she had been suffering from a lung infection which had been missed by her local doctor who had diagnosed her symptoms as indigestion.

**April 2018**

**18/304**

A student was taking part in a drysuit training course together with another student and an instructor. During the dive, the instructor attended to another student who was having difficulties, so after completing a safety stop the student ascended on his own and a couple of minutes later the instructor surfaced with the other student. A few days after the dive, the student reported ear problems. (see also 18/148 and 18/305)

**April 2018**

**18/056**

A diver and his buddy carried out a shore dive. The diver used twin 12 lt cylinders of air and a 7 lt cylinder with nitrox 50 for decompression. The pair reached a maximum depth of 44m, ascended and completed stops of 1 min at 9m and 1 min at 6m on nitrox 50 and surfaced with a dive duration of 39 min. The diver switched back to air and started to swim to the end of a pontoon where some drills had been planned. While swimming the diver felt out of breath and tired but this lessened when he slowed down. At the end of the pontoon the diver still felt out of breath, exited the water and experienced some 'gurgling' in his chest. This became more pronounced as he stowed away equipment but at rest it was tolerable although the diver felt the need to cough but without any discharge. Medical assessment was that the diver had suffered from immersion pulmonary oedema. The symptoms resolved in approximately 2 hours.

**May 2018**

**18/073**

A diver and his buddy, using air, carried out a wreck dive from a dive boat. The buddy had pain in his right ear on the descent which he alleviated by slightly ascending. As the pain subsided the pair continued their dive and surfaced with a dive duration of 31 min to a maximum depth of 16m. Following the dive the buddy reported that he had ear pain again. He saw a doctor who diagnosed a perforated ear drum and he was told not to dive for a week but was expected to make a full recovery.

**May 2018**

**18/306**

A student was under training and was on the first open water dive when she ascended from 6m direct to the surface accompanied by her instructor within normal ascent rates and was distressed when on the surface. The student later reported that she had a 'minor nose bleed' on the surface. The Instructor did not notice the nose bleed or any issues apart from frustration from the student having problems with the skills. The student left at the end of the day without reporting any injury to the Instructor. On the next day she reported to the instructor that her ears were sore and was recommended not to dive. The student reported that she then went to the hospital on the four days later suffering from 'chronic ear and chest pains'. The casualty received 6 hours of oxygen therapy and was informed by the medical staff that she had suffered an 'ear barotrauma'.

**May 2018**

**18/066**

A group of three rebreather divers using trimix 10/53 diluent in their CCRs carried out a hardboat dive to a wreck in

approximately 60m. The divers descended, checked the shot was in the wreck, secured strobe lights and moved out to explore. Their planned bottom time was up to 30 min and a run time of up to 90 min. On return to the shotline it was discovered that it was not where the divers had left it so they deployed DSMBs and started their ascent to the surface at 31 min. They carried out a 3 min stop at 15, a 4 min stop at 12m and a 6 min stop at 9m. At 6m two of the divers' computers cleared after around 8 min but the third diver's had not. When communicating with him it became clear the third diver was not fully alert, appeared confused and responded with an 'OK' signal to all requests regarding his decompression status. A check of the diver's computer showed that the set point had changed to 0.7 PO2 on the 6m stop and this had extended his decompression. The two divers supported the third at 6m until the decompression requirement of 55 min had cleared and then took him gently to the surface. They surfaced with a dive duration of 136 min to a maximum depth of 59m. The diver was supported on the surface, assisted onto the hardboat's lift and recovered aboard where other divers removed his equipment and he was put on oxygen and fluids. The skipper called the Coastguard and was call linked to a hyperbaric chamber. The diver's signs and symptoms included shivering, congested breathing, pale and confused and loss of short term memory. He could recall events at the start of the dive and on the bottom but nothing from the 6m decompression stop. The diver's pulse and respiration were fine and a neurological check revealed no other issues. The diver was taken ashore and then by ambulance to a hyperbaric chamber with suspected DCI. His temperature was around 34 deg C and he was re-warmed by a heated blanket in the ambulance. At the chamber the diver was diagnosed with hypothermia and was observed and re-warmed. On return to normal core body temperature it was confirmed that the diver did not have DCI and was discharged.

**May 2018** **18/086**

A diver using open circuit and his buddy using a CCR carried out a wreck dive from a boat. They descended the shotline but at 16m the open circuit diver developed a headache and signalled this to his buddy. The pair aborted the dive, ascended and surfaced with a dive duration of 6 min to a maximum depth of 16m. They were recovered aboard the boat and the diver, believed to have been suffering from mild heat exhaustion, made a full recovery and dived the following day.

**May 2018** **18/071**

A diver and a trainee had arrived at a harbour shore dive site. Whilst waiting for their dive manager the pair kitted up and, as the weather was very warm, the diver entered the water to cool off. The trainee then asked the diver to join him jumping off the harbour pier. The diver stepped off the pier believing the trainee to be behind her but he had stopped to talk to a bystander. When the diver surfaced she saw a splash to her left and realised that the trainee had jumped into the harbour at its shallowest point. He was in pain with an injured knee but said he was fine. The diver advised him to get out of the water and rest his knee until the dive manager arrived when they could carry out their training dive. The diver helped other trainees who had arrived to kit up and the dive manager arrived on the site. He had seen the trainee crying whilst sitting at the boot of his mother's car as she pulled his wetsuit off. When asked what was wrong the mother said that he had jumped off the pier into shallow water and his leg was

swollen. When asked if the trainee was 'OK' his mother said they were going home. The following day the dive manager received a call from the father of the trainee advising him that he was in hospital with a broken leg.

**May 2018** **18/076**

A diver attended a technical try-dive event to carry out a CCR shore dive. She was due to dive with an instructor and another diver but whilst kitting up under a gazebo it was found there was a fault on the mouthpiece of her CCR. As this required changing and so as not to delay the instructor and other diver, another instructor started to change the mouthpiece. At the time there was a thunderstorm with very heavy rain and part of the cliff above the gazebo fell away and onto it. As well as the instructor and the diver there were other people using the gazebo but the diver did not recognise immediately what had happened as she had her hood on and thought the noise was more thunder. Her original instructor pulled her across a path away from the bottom of the cliff. A rock hit her on the cheek causing a small graze. Mud was also noticed on her hood which suggested something had hit her on the head but she was unaware of this. The gazebo had been hit by rocks, its frame damaged and a CCR unit under the gazebo was also hit and damaged. The diver reported the event to the dive site staff, had a shower and changed but did not dive for the remainder of the event as she had been quite shaken by the incident.

**May 2018** **18/263**

A diver and his buddy completed a first dive of the day without incident to a maximum depth of 12m for a total duration of 8 min. After a surface interval of 120 min the pair conducted a dive to a maximum depth of 18m. As the pair worked their way shallower and reached a depth of 8m the diver complained of ear pain and the pair surfaced after a total dive time of 18 min. The diver's ear was found to be bleeding and one of the site team placed a patch over the ear and the diver was advised to go to hospital.

**June 2018** **18/079**

A trainee was carrying out a swimming assessment prior to starting pool training on a diving course. The trainee stopped halfway and held onto the side of the pool. He was experiencing shoulder pain and informed the course instructor that two weeks earlier he had been involved in a mountain biking accident. He had been seen by a doctor and following an x-ray had been informed it was just muscle damage and would be healed in time for the diving course. The trainee said he was able to complete the swim assessment and subsequently carried out two pool sessions with an instructor and another trainee and reached a maximum depth of 1.8m for around 2 hours. The following morning the diver informed the course instructor that he had been in great pain all night and had taken medication. He was sent to a doctor that morning who informed the trainee that he had damaged a deltoid muscle and was required to rest for two weeks after which further investigation would be carried out if required.

**June 2018** **18/308**

A student took part in a confined water training dive with no incident occurring during the session. The following day at 0830 hours the student experienced chest pains and was taken to hospital. The student was diagnosed with a pneumothorax. The lung re-inflated itself. This was

reported to be the result of a medical condition unknown by the student or his parents.

*June 2018*

*18/265*

An instructor leading a student on a training dive carried out a giant stride entry from a quayside and hit her foot on a rock. The instructor continued with the training dive to a maximum depth of 6m and total duration of 31 min. Following the dive the instructor was found to have deep tissue damage to her ankle.

*June 2018*

*18/179*

A pair of divers entered the water from a charter vessel and descended the shotline to a wreck. During the descent one diver experienced problems with his low pressure inflator to his BCD, which resulted in him suffering shock and panic at the shotline. He returned to the surface pulling himself up the shotline hand over hand due to lack of buoyancy. The diver surfaced showing distress, which was spotted by the charter boat skipper who alerted others aboard. Shortly after surfacing in distress the diver sank again and then surfaced again in distress after he managed to release his weightbelt. Total time underwater was 12 min. The skipper moved the boat close to the distressed diver and another diver who had been preparing to dive pulled the diver onto the lift. The diver was wide eyed, had purple lips and a white complexion and was in a weakened and semiconscious state. The diver was raised on the lift to deck level and pulled aboard and his equipment removed. The diver was positioned lying down with legs raised and administered oxygen. Initially remained white with a pulse of 100 bpm and drifted in and out of a sleepy state. After 3 min his colour started to return and his pulse rate slowed and the diver gave an indication he was getting better. After 20 min the oxygen cylinder was exhausted, the diver took some water and then vomited to the side. The diver then was given nitrox 70 to breathe for 30 min and then nitrox 50 for a further 30 min whilst the boat returned to harbour. The DCI helpline was contacted for advice and they advised transfer to hospital due to the short dive duration. Once ashore the diver was escorted to hospital to be checked out and later released.

*July 2018*

*18/134*

On a training course an instructor, safety diver, a trainee and his buddy carried out two dives from a RHIB. The first dive was to a maximum depth of 8m and the second dive was to a maximum depth of 9m, both with a dive duration of 36 min. There was no diving the following day but in the evening the trainee reported to the dive manager that he had woken up that morning with a wet pillow due to fluid leaking from his ear but was not in any pain. The trainee was advised to go to a medical centre the following morning where a doctor confirmed he had a perforated ear drum and he was sent to hospital to have fluid drained from his ear. He had a follow up medical check two days later and was advised to see a doctor two weeks later. The doctor confirmed that the trainee's ear had fully healed but his hearing had not fully recovered. On a repeat examination a week later, his hearing had returned to normal.

*July 2018*

*18/110*

A CCR trimix diver using a gradient factor set to 50/85, trimix 10/50 diluent, trimix 20/45 O/C bailout, plus nitrox 80 and nitrox 50 as O/C deco bailout gases, carried out a

wreck dive with two other CCR trimix divers on a hardboat diving trip. It was their fourth dive over a four day period. The first day had been a dive to a maximum depth of 59m with a dive duration of 115 min, the second day's dive to a maximum depth of 67m with a dive duration of 146 min and the third day's dive to a maximum depth of 68m with a dive duration of 150 min. On the fourth day their wreck dive had a dive duration of 143 min to a maximum depth of 62m. The diver had felt cold as he passed through the thermoclines and this persisted during the approximately 40 min bottom phase of the dive. The diver had not felt cold on the previous three dives but on this one the feeling progressively became worse on the ascent and decompression phases. By the time he surfaced the diver was shaking. In addition the diver had felt the need to urinate using a P-valve during the bottom, ascent and decompression phases which was unusual for him as this normally happened well into final decompression stops. Despite feeling the need to urinate this resulted in very little flow but was accompanied by a burning sensation. Back aboard the boat the diver changed into warm clothes, had lunch and hot drinks. That evening he went to bed without eating and developed symptoms similar to those of exposure but still needing to urinate often with little flow and significant pain. This continued throughout the night and into the following day. By late afternoon his symptoms had worsened, a hyperbaric chamber was contacted and they diagnosed a bladder infection and said the diver should see a local doctor. The doctor confirmed the diagnosis and sent the diver to hospital where he was admitted and remained for six days being treated with intravenous saline, twice daily injections of antibiotics, paracetamol, and daily injections to prevent blood clotting. The diver was discharged with nine days of oral antibiotics and he made a full recovery. The diver suspected the infection came from his P-valve system. He was fastidious in disinfecting the system components but his drysuit had been left on the boat each day and the tube and valve were not disinfected after each dive. The medical staff who treated the diver were in general agreement that it was rare for males to suffer urinary infections unless there is some external source. The diver also suspected, although had no clear evidence, that the infection may have begun on one of the earlier dives. On one of the first two he was under-weighted with little gas in his drysuit and on one occasion he experienced a kink in the P-valve's tube which had caused a leakage, either of which may have caused some back pressure.

*July 2018*

*18/113*

A diver using air carried out a boat dive and after a surface interval of 1 hour 40 min he carried out a second boat dive with a dive duration of 34 min to a maximum depth of 12m. He surfaced from the dive with a blocked ear which had not cleared after 4 hours so he reported this to the dive manager. After a shower later that evening the diver noticed a discharge from his ear. He phoned a doctor for advice who suspected an outer ear infection and recommended seeing a doctor for antibiotics. The diver visited a medical centre the following morning and the doctor diagnosed ear barotrauma, advised the diver not to dive for 2 to 3 days and return to the medical centre prior to any diving being planned within the next 2 to 3 weeks.

*July 2018*

*18/114*

A diver using air carried out a boat dive reaching a maximum depth of 18m on a wreck. The diver surfaced from the dive with a dive duration of 28 min and reported



feeling excessively tired and slightly 'spaced out' which had started during his ascent. The diver was given water to sip and ate some food to improve his energy level. After no improvement the diver was taken to a medical centre where he was assessed and found to have low blood oxygen levels. The diver returned to the medical centre the following morning and his oxygen levels had returned to normal. The medical staff advised that the diver should not dive for the next 48 hours.

**August 2018**

**18/126**

A diver on a training course had conducted a pool dive on a Monday, a 13m sea dive on the Tuesday, two 20m dives on the Wednesday and a 13m and a 10m on the Thursday. He had surfaced from the dives fit and well with no incidents. After returning home on the Thursday evening the diver had numbness and pain in his left shoulder, which he described as a 'dead arm' feeling. He decided to have a good night's rest and the following morning he felt much better and the symptoms were no longer present. The diver informed his dive manager who sought medical advice and it was suggested the diver have a 24 hour break from diving and to go to a local medical centre. The centre referred the diver to a hyperbaric chamber where he was seen by the duty doctor. The decision was made that the diver was fit and well with no long term problems but he was given the chamber's call number in any further issues arose.

**August 2018**

**18/273**

A student was on a training dive from the shore with an instructor, a fellow student and an experienced diver as an assistant. The group conducted a number of controlled buoyant lift ascents during the first 22 min of the dive and then conducted an exploratory dive to a maximum depth of 11m. As the group made their way back towards the shore the instructor noted that one of the students was higher in the water than the rest and trying to inflate her BCD. The instructor finned up to her and was given an up signal as the diver had been struggling to keep up and her BCD did not feel as if it was inflating. The instructor assisted her to the surface with a mixture of his own and student's buoyancy from a depth of 3m. On surfacing, after a total dive time of 38 min, the student removed her regulator and said she could not breathe. The instructor took her to a nearby rock so she could sit down and helped remove her mask and loosen her equipment. The student still complained of difficulty breathing and feeling restricted. The other two divers surfaced nearby and they assisted the student back to the shore and she was assisted from the water by the shore cover. On shore the student was provided nitrox 30 to breathe and assisted out of her equipment. On removal of her drysuit the student found around a litre of water in each of the legs of her drysuit, which she felt might explain the difficulties she had keeping up with the rest of the group.

**August 2018**

**18/132**

A diver and her buddy on a hardboat diving trip had carried out a dive on the first day using air and reached a maximum depth of 32m for a dive duration of approximately 30 min. The diver had incurred decompression stops but had missed some of these on her ascent and her computer went into error mode indicating no further diving for 48 hours. Her buddy, who had not gone as deep during the dive did not require stops. The diver was unaware of the problem and did not report it to the dive manager. The following day the buddy pair using

air carried out a wreck dive with a maximum depth of 28m with a dive duration of 32 min including a 3 min safety stop at 6m. During the surface interval the diver reported to the dive manager that she had not noticed her computer was in error mode until well into the dive. The dive manager checked her computer and advised her not to do the second planned dive of the day. The diver had no symptoms but her computer remained in error mode. Overnight a rash developed on the diver's neck and chest which continued to spread to her back, arms and hands. Suspecting the diver had a possible skin DCI, she was put on nitrox 31 which was available at the time and a call made to a hyperbaric chamber. After some discussion it was decided the diver should be taken to the chamber. An oxygen kit was collected from the skipper of the hardboat which the diver used for the 2 to 3 hour drive to the chamber. At the chamber the diver was checked by the doctors and her rash had continued to spread and redden. It was itchy but otherwise the diver had no other symptoms. The doctors did not believe the rash was DCI and gave the diver oral antihistamines which started to reduce the rash after an hour or so. The doctors concluded the diver's rash was most probably an allergic reaction, possibly due to a jelly fish sting, and she was advised not to dive for two weeks as she had missed decompression stops on the first day and that she had continued to dive on the second day. The diver continued to take antihistamines and the rash disappeared with no further side effects.

**August 2018**

**18/309**

During Discover Scuba Diving pool training, the casualty swallowed some pool water during the dive. The casualty was taken out of the pool and was sick 3 times. The casualty was not taken to hospital and felt OK the next day.

**August 2018**

**18/133**

After a 50 min dive to 36m a diver reported a 'tingling' sensation. The dive boat requested assistance for a suspected DCI and the diver was taken back to harbour and met by a Coastguard rescue team and an ambulance. The diver was taken to a hyperbaric chamber for assessment where it was concluded that the symptoms were in fact a jellyfish sting.

**September 2018**

**18/208**

A diver was walking down a slipway to help support a RHIB during recovery onto a trailer. The diver was taking care as the slip was slippery but an undertow caused both his feet to slide down the slipway and he lost balance and fell backwards landing in the water. The diver consciously held his head up to protect it as he was unsure of the depth of water and was concerned about hitting his head on the slipway. The water proved deep enough and the diver righted himself and reported to others who expressed concern that only his pride was hurt at the time. The diver subsequently discovered he had cracked a rib during the fall and it was still painful five weeks later.

**September 2018**

**18/270**

A student on a training course conducted a dive to a maximum depth of 6m for a total duration of 25 min. During the dive the diver started to experience a headache which got progressively worse during the dive. On exiting the water, the diver was placed on oxygen for 10 min and was sick whilst moving from the quayside. It

was considered the problem may have been caused by an equalisation failure and a recompression chamber was contacted for advice. The chamber advised 20 min on oxygen, legs elevated and sips of water. After 20 min the diver sat up of own accord.

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**September 2018**

**18/154**

Four divers carried out the first shore dive of an instructor training course. The group consisted an instructor demonstrating teaching techniques to two divers acting as 'students' and observed by the course leader. They swam out on the surface in windy conditions to a wreck shotline which left the instructor and one of his 'students' winded but it had been agreed that the group would pause at the shotline to allow everyone to catch their breath prior to descent. This they did and the group descended but the instructor experienced symptoms consistent with mucus on his chest which impaired his breathing. He stopped the group at 6m to perform a bubble check and to see if the symptoms abated but when they did not he signalled to abort the dive and the group surfaced with a dive duration of 5 min to a maximum depth of 6m. The instructor arranged for the course leader to take over control of the group as he felt unfit to continue and they waited for him to return to the shore before continuing the dive. Back ashore the instructor coughed up mucus, his symptoms eased and he was able to complete two further 6m sessions that afternoon. The instructor acknowledged that he was physically and mentally fatigued prior to the dive due to a combination of work load and high stress levels of his job, his volunteer diving activities and having left home in the early hours of the morning to travel to the dive site. He also felt he was over-weighted, his drysuit was 'snug' and this impacted on his fitness and movement in the water as well as the possibility that he had a mild cold or other chest complaint that day.

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**September 2018**

**18/162**

Two trainees, an instructor and safety diver carried out a shore dive. This was the first open water dive for the trainees and the plan was for a dive duration of 30 min to a maximum depth of 6m. Reaching a maximum depth of 2m and 14 min into the dive one of the trainees had just completed his regulator retrieval skill and as his instructor was about to demonstrate the next skill the trainee signalled to him that he was going to ascend and appeared to vomit. The instructor followed the trainee to the surface where the trainee vomited twice more. The other trainee and safety diver surfaced and the group exited the water. Back ashore the trainee was checked over, appeared normal except for a swelling on his lower lip and admitted that he struggled retaining items in his mouth such as gum shields. He said that when he returned the regulator to his mouth at the end of the retrieval skill his gag reflex had made him vomit which made him head to the surface. The dive manager, unsure if the trainee's lip swelling had been caused by an allergic reaction to the regulator mouthpiece or from sealife such as a jellyfish, decided to seek medical advice and the doctor said the trainee should make an appointment at a medical centre that afternoon as a precaution. The trainee remained on the shore with the dive manager while the instructor, remaining trainee and safety diver completed a second dive with a dive duration of 24 min. On completion of the dive the trainee informed the instructor that he now had mild chest pain and the doctor was contacted again who said the trainee should be put on oxygen and that the instructor was to call 999. The instructor made the call and

was informed that an air ambulance had been tasked to attend the scene due to the chest pain complaint. The trainee was put on oxygen and an off-duty paramedic arrived followed by the air ambulance and a land ambulance. After consultation with a hyperbaric chamber the trainee was airlifted to an A&E department. The trainee was discharged mid-afternoon with no injuries and given clearance to dive by the emergency doctor. However, with the concern regarding the trainee's inability to confidently retain the regulator in his mouth, it was decided to remove him from the course and that he should consult with his own doctor so a decision could be made on future diving.

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**September 2018**

**18/174**

A diver spent a week on a training course. On his first open water dive he had experienced problems clearing his ears on the descent. Both ears were difficult to clear with the right ear being more problematic. The last dive of the week was a wreck dive and the diver, using air, had problems clearing his ears throughout the entire descent to 21m. He and his buddy ascended to 17m and continued the dive but just before they ascended the diver developed a headache. He surfaced with a dive duration of 21 min to a maximum depth of 22m and his headache became worse, he was nauseous and had bloody mucus in his mask. The boat returned to shore and a doctor was contacted. They recommended seeing a doctor at a hyperbaric chamber and following examination the doctor at the chamber diagnosed ear barotrauma in both the diver's ears. The doctor recommended no diving for seven days and the diver to take a pain killers and anti-inflammatory pills until the pain ceased

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**September 2018**

**18/272**

A diver was taking part in the deep dive of a training course. The dive to a maximum depth 28m for a total duration of 21 min, including a 3 min safety stop at 5m, was conducted without incident apart from some ear issue at 28m, which was resolved. On surfacing the diver felt unwell and after leaving the water passed out and was shaking on the floor and was placed in the recovery position. The diver was given oxygen and shortly after came around and was coherent, sat up but looked spaced out and then became unresponsive again and was replaced into the recovery position. Once he recovered again he was transported to the on site first aid room. The diver was ok in the first aid room and was sat up eating and drinking. The diver had previously hurt his ankle and this was aggravated on the quayside when he passed out. The diver was advised not to dive again that day and to avoid alcohol and consult his own GP.

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**October 2018**

**19/003**

A trainee had completed his pool training to a maximum depth 3m, comprising two 2 hour sessions and complained of ear pain. He was seen at a medical centre where it was found that the trainee's inner ear was red and inflamed and he was advised not to dive for a week. The trainee withdrew from the course.

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**October 2018**

**19/002**

A trainee carried out two shore training dives using air. He experienced no problems on his first dive to a maximum depth of 6m with a dive duration of 36 min and after a 1 hour surface interval carried out his second dive. The

trainee was unable to clear his ears on the descent to a maximum depth of 7m, the dive was aborted and he surfaced with a dive duration of 10 min. On the surface he reported his ear felt blocked but was not painful. The following day the trainee was able to dive and completed his training course.

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*November 2018*

*19/034*

A pair of divers carried out a shore dive. They reached a maximum depth of 33m with a dive duration of 45 min and had carried out deep decompression stops. When one of the divers got back to her car she had stomach pains and 'pins and needles' in both legs. The diver was put on oxygen and started to show improvement in both her legs and stomach. The diver had experienced skin DCI in the past, a recompression chamber was contacted and she was taken in to be checked. It was reported that the medical staff at the chamber said the diver was 'OK'.

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*November 2018*

*19/033*

Two divers carried out a shore dive reaching a maximum depth of 19m. At depth one of the divers felt water in their regulator, panicked and surfaced with a total dive duration of 5 min. The diver complained of a feeling of trapped gas and experienced pain in the chest due to build-up of wind and was put on oxygen for 20 min.

## Miscellaneous

*January 2018*

*18/240*

A diver was reported 18 min overdue by his spouse. He had been conducting a shore dive. A CRT and inshore lifeboat were tasked to the beach to locate the diver. The diver called CG stating that he was safe and well, and had given his spouse the wrong time. (Coastguard report)

*May 2018*

*18/064*

The Coastguard was contacted after a walker on the sea shore noticed that two kayakers were no longer with their craft and could not be seen. An inshore lifeboat was deployed and was quickly on the scene and established that the kayakers were not missing but wreck diving. Their kayaks were flying the appropriate dive flag and the crew stood off until the two divers surfaced and were found to be in no difficulty. A Lifeboat spokesman said it was a false alarm with good intent and understandable that the walker was concerned. They also added that it was always a good idea for divers to let the Coastguard know their plan before setting off. (Coastguard report).

*May 2018*

*18/065*

An instructor, his student and an accompanying pair of divers carried out a shore dive. They were practicing the surface towing element of rescue skills with one of the divers acting as the 'rescued diver' for the student. The instructor was keeping an eye out for possible hazards when he spotted something on the surface. The instructor noted the student had carried out the tow successfully and he then collected the item seen on the surface. It was a fin with a rock boot still in the fin's foot pocket. The instructor thought this quite strange as he had seen fins lost in the past but this was a first. He took the fin and boot to the dive site store and was told that someone had reported them missing and they had been lost at a depth of 16m.

*September 2018*

*18/247*

999 call received reporting a person swimming around a small dinghy with no one aboard. The Coastguard tasked an inshore lifeboat and two CRT teams to locate and ensure the safety of the person. It was found that they were solo freediving from the vessel. It was found that although he was flying an A flag it was not big enough to be visible to passers-by. (Coastguard report)

*September 2018*

*18/277*

A lifeboat was launched in response to an emergency call to the police reporting a problem with an overcrowded dinghy and a person in the water. The lifeboat arrived on scene and a CRT had spotted a possible person in the water and directed the lifeboat to investigate. The lifeboat identified a lone skindiver in the water with a large circular surface marker buoy. The diver was OK and required no assistance and after reporting this to the CRT the lifeboat returned to station. (RNLI report)

*September 2018*

*18/170*

A diver and his buddy, both using air, carried out a wreck dive from a RHIB. The buddy had warned the diver that he

was new to drysuit diving and had only carried out two dives using it. The pair descended and travelled along the starboard side of the wreck. The visibility was around 3m and it was quite dark but both divers had torches and the diver was also wearing a strobe light. When the divers reached the bow and the bottom of the shotline the buddy became unsettled and began to ascend but aware of the situation the diver held onto the shotline, grabbed hold and pulled the buddy down to him. The diver settled the buddy down, checked his buoyancy and they descended to 28m and started to follow the hull plating. About 15m from the bow all the diver could see was darkness but there was a dark shape above them and the diver thought they may be heading into a no clear surface situation. With reduced visibility the diver indicated to his buddy to turn around, head back to the hull plating, ascend by it and then travel along the top of the wreck. The buddy signalled 'OK' so the diver started to swim thinking the buddy was beside him but when he checked the buddy was not there and the diver saw his fins ascending. He swam up fast to him and the buddy indicated he had lost his weightbelt but the dark shape that was above them was a piece of the wreck at 24m which he had managed to grab onto. The diver signalled that the buddy was 'OK', calmed him down and clipped on his buddy line. The diver then unclipped the reel from his DSMB buoy and tried to locate something on the wreck to attach the line. He found a cross beam, signalled for the buddy to hold onto the wreck while he attached the DSMB line and then moved back to his buddy. They held onto each other's BCDs, dumped all air and ascended as the diver slowly reeled out the DSMB line. At one point they began to re-descend so the diver put a small amount of air in his BCD and, checking their air, they ascended to 6m and carried out a 4 min decompression stop. They surfaced with a dive duration of 23 min to a maximum depth of 28m. With no DSMB buoy to mark their position and seeing their dive boat about 20m away, the diver used his whistle and the cox'n signalled he had seen them. As the boat headed towards them the diver cut the line attached to the wreck, released the buddy line when the boat was alongside and the divers were recovered aboard.

*October 2018*

*19/027*

The police received a call reporting a flashing light beneath a pier and possible shouts for help. They passed this to the Coastguard who tasked a lifeboat and a Coastguard rescue team to investigate. Once they were on the scene it was confirmed that the source of the light and shouting was a diver carrying out a shore dive who did not require any assistance. (Coastguard report).

*October 2018*

*19/041*

The Coastguard received a report of a DSMB floating in a bay with no sign of any divers or dive boats in the vicinity. Investigations were conducted whilst a lifeboat and a Coastguard rescue team were all tasked to search for a possible missing or overdue diver. The DSMB had no markings or contact details. Investigations found that it had been lost by a diver from a charter boat the previous day (Incident number 18/321) and that all divers were safe and well. (Coastguard report).



## Overseas Incidents

### Fatality

October 2018

19/016

A group of divers on holiday arrived at a shore dive site and were setting up their equipment when a woman raised concerns regarding a diver in the water some distance from the shore. Four of the diving group wearing wetsuits, masks and fins entered the water and swam to the aid of the diver. When the first rescuer arrived he found the diver with her feet floating on the surface and her head under the water with her regulator out. Not knowing the equipment and difficult to see in the swell as to whether the diver was wearing a weightbelt, he immediately released all her waist buckles to drop a possible weightbelt and fully inflated the diver's BCD and drysuit. The diver's head was still low in the water due to the swell but rescue breaths were administered. On arrival of the other three rescuers they made an effort to try and support the diver further out of the water. Keeping her airway open the diver was towed ashore by the first rescuer using her twin-set manifold and the others finning forwards. Approximately twenty minutes later they reached the exit point, some two feet above the water with a fairly large swell, and were met by other members of their dive group waiting to assist in recovering the diver. After further rescue breaths had been administered whilst releasing the diver's stage cylinder, the group tried to de-kit the diver but it was soon apparent that due to the tightness of the harness and her drysuit being fully inflated that the harness would have to be cut. Once this was done the diver was recovered ashore where oxygen and CPR were administered. An ambulance arrived approximately five minutes later and the group assisted in giving CPR for nearly an hour whilst the emergency services were attempting other life saving options. During this time another diver in the area, who was also a doctor, assisted the emergency services until a local doctor arrived to declare the diver deceased. The Police arrived and assumed control of the incident. The diver's twin-set, which had a central lead weight between the cylinders, had 100 bar remaining, all valves including the manifold were fully open and the stage cylinder had 210 bar with the regulator pressurised but turned off.

### Decompression Illness

April 2018

18/054

A group of divers was on a diving trip and three of them, using nitrox 32 with computers set to air, carried out a shore dive to a wreck. The dive was to a maximum depth of 20m for a dive duration of 25 min. The majority of the dive was spent at 12m or less and the divers completed 3 min of safety stops as they swam back to their exit point and began their ascent. At approximately 5m one of the divers began to ascend faster than normal and surfaced. The other two divers completed a normal ascent and joined him on the surface around 45 sec later. The group, led by the diver who had made the buoyant ascent, swam to the exit point and exited the water via steps 3m high. Whilst de-kitting the diver complained of a headache and his computer was examined but showed no warnings. The diver was monitored but was still suffering from a headache and he began to vomit. A diving doctor was contacted and following examination by senior divers

in the group, the diver was put on oxygen and an ambulance called to take him to hospital. There the diver was given an intra-venous infusion and during his examination reported some visual disturbances. A diving doctor examined the diver and, following a chest x-ray which was deemed to be normal, the diver was given recompression treatment. Following treatment the diver reported feeling completely fine, was discharged with the advice not to fly for the next 48 hours and not to dive before having another medical examination.

April 2018

18/055

Three divers undertook a final dive whilst on holiday abroad. The dive was the second of two planned that day. The first dive, using nitrox 32, had been to a maximum depth of 30m with a dive duration of 34 min and after a surface interval of 2 hours 8 min, the second was a shore dive using air to a wreck with a maximum depth of 27m and a dive duration of 39 min including a 3 min safety stop at 6m. From the point at which they surfaced the group had a surface swim of approximately 250m taking around 7 min to their exit point. Once ashore the divers reported all was well apart from tired legs. The group returned to the dive centre where they were based and around 90 min after the dive one of the divers reported that he had begun to experience 'pins and needles' in the palms of his hands. A neurological check was carried out and medical advice sought. The advice was that the diver should be checked by a doctor and he was taken to hospital where, after being examined in A&E and then by a diving doctor, the diver was given oxygen, had an ECG and fluids. He underwent two sessions of recompression treatment, was discharged and told that his treatment was precautionary but he was not to dive for at least four weeks and not before seeking further medical investigation to check for a PFO.

August 2018

19/077

A diver and her buddy had carried out a wreck dive from a RHIB reaching a maximum depth of 25m. There were no problems on the dive and they had carried out a 3 min precautionary stop at 5m. Around 45 min after the dive and arriving back on shore the diver started to lose sensation in her legs. She managed to get off the RHIB but from then on needed help as she had lost the ability to walk by herself. She was put on oxygen and taken to a hospital with a recompression chamber. She remained on the oxygen for the 90 min journey and was able to walk from the car to the chamber where she was diagnosed with DCI. The diver received recompression treatment and her symptoms resolved but given her age of 57, the twenty years of incident free diving and the non-provocative dive profile, the chamber staff suspected a PFO was the most likely cause of the DCI. When the diver returned home she underwent testing and it was found that she had a significant PFO. She had the PFO successfully closed and a full return to diving was expected but with a depth limit of 30m for the first year.

### Boat/Surface

April 2018

18/048

A group of seven divers using air carried out a shore dive to a wreck site. One pair entered the water and dived for

approximately 30 min but failed to find the wreck. The second pair entered while the first pair were in the water and, once the first pair had returned to shore, the remaining three divers handed over shore cover to them and entered the water. After approximately 30 min the second pair had not returned within their maximum dive time. The shore cover went up to higher ground to see if they could locate the divers. They saw the pair had surfaced, reaching a maximum depth of 31m with a dive duration of 50 min, to the left of the entry/exit point. The divers, even though they had dropped their weightbelts, were unable to make their way back as they could not fin against the current and waves. They eventually gave up to prevent exhaustion and signalled to the shore for help and for someone to call the emergency services. A local woman saw the divers in distress, called for help and informed the shore cover who made additional calls to the emergency services to ensure help was on the way. A helicopter arrived on the scene, instructed the divers to remove their equipment and winched them aboard. The divers were landed ashore and escorted to an ambulance. Neither diver had missed decompression stops and they were released after a brief assessment. During the rescue the trio of divers had surfaced within the maximum dive time at the entry/exit point without issue.

*May 2018*

*18/074*

A dive manager had been told that all information and permissions regarding a designated dive site in a harbour had been notified and therefore approved by the appropriate authorities. He was shore cover for two pairs of divers who carried out a shallow dive to a maximum depth of 6m to practise skills and carry out DSMB deployment, which they were to use for their ascents. The dive manager briefed them not to venture out into the main channel but stay close to the harbour wall as fast boats went in and out and, if they heard a boat, they should remain on the bottom until it had passed. He had set up an A flag by steps leading to the designated site so it could be seen by all boats and he remained on shore by the steps. During the dive a RHIB entered the harbour and the dive manager waved at it, pointed to the A flag and to where his divers were in the water and was acknowledged by the cox'n. One pair of divers had moved along a jetty, out of the designated area but still close to the wall and the other pair were still close to the steps when a patrol boat entered the harbour. The dive manager waved to the boat but received no response but was happy that his divers were clear of any danger. The patrol boat reported it had no knowledge nor had given permission for a dive to take place. When it noticed two streams of bubbles on the starboard side at a range of 2m it had stopped its propellers but, not making contact with the divers, continued to its assigned berth. The patrol boat also said that the divers were not marked by a float and there was no A flag or dive manager and reported this to the Harbour Master. With confusion regarding the reporting procedures and contradictory reports as to the actual events, the harbour master investigated and determined that there had been the potential for injury or a near miss and some safety issues could be improved. However, it had been assessed that no divers were deemed to be in immediate danger at any time during the dive with the divers being briefed on safety procedures for any passing boats. Where the two divers had moved out of the designated area, recommendations were made to improve the site information when future diving took place.

## Ascents

*April 2018*

*18/057*

Two divers on a holiday abroad carried out a shore dive to a wreck. They descended but after a period of 11 min one of the divers experienced a fast ascent from 22m but managed to arrest it at 8m. She then re-descended and was met by her buddy, who had ascended normally, at 14m. The pair agreed to continue the dive and they descended to 20m. They surfaced with a dive duration of 35 min reaching a maximum depth of 25m. Around 1 hour 30 min later the diver who had made the fast ascent informed the dive manager that she had slight discomfort in her left elbow. The dive manager checked for abnormalities or rashes and checked again 5 min later to see if the discomfort had eased or got worse. Medical advice was sought and the diver spoke to the doctor. The dive manager was asked to carry out a neurological check of the diver and get her to carry out some exercises to determine if the discomfort was muscular rather than anything else. It was decided this was the case but the diver was advised not to dive again that day, drink plenty of fluids and have a further check later that day. The final outcome was that the issue was almost certainly muscular and no further action was required.

## Technique

*September 2018*

*18/158*

An experienced diver, who was also an instructor, had taken a two year break from diving. She decided to carry out some resort diving whilst on holiday and, as she wanted to refresh core skills before using her qualification, she initially joined up with a recently qualified instructor and his trainee. The trio had carried out two dives and the following morning they carried out a dive to a maximum depth of 16m with a dive duration of 41 min. After a surface interval of 65 min, they carried out a second dive with the plan to complete some emergency ascent drills at the beginning of the dive, some extra buoyancy drills to help the trainee and end with a short exploratory dive. After completing the skills the diver and trainee were led by the instructor on an exploratory dive to a maximum depth of 16m. The instructor swam ahead and regularly turned around to check all was well with the diver and trainee who were swimming side by side. After approximately 35 min and at around 5m the diver checked her air which was 110 bar and could see from the trainee's dangling gauge that he had around 60 bar. As the instructor had not done any air checks since the end of the skills session and with the trainee a little buoyant, when the instructor next turned around the diver signalled her remaining air and that the trainee was on reserve. The instructor acknowledged her signal, swam back to the pair and pointed at the diver's alternate source regulator. The diver assumed that perhaps it had come out of its retainer clip but it was still stowed and, slightly confused, looked back to the instructor who picked up his contents gauge, showed it to the diver and she saw it appeared to be almost on zero. She immediately donated her alternate source to him and they exchanged 'OK' signals. Wanting to keep the group together, the diver signalled the trainee, who was floating 1m or so above them, to come down and as soon as he was in reach she grabbed his hand and indicated he should keep a hold on her. The instructor indicated that he wanted to continue swimming in the same direction and from the dive plan and route navigated by the instructor, the diver

estimated they probably had around a 5 min swim to reach their start point and the dive boat. The diver thought that if she could keep the three of them together then swimming underwater would be easier given the slight swell on the surface. After around 4 min the diver made out the shape of the dive boat above and other divers returning to the anchor line ready to ascend. At that point the instructor returned the diver's alternate source, put his own regulator back in, gave the 'Up' signal and immediately made a quick ascent to the surface. The diver looked at the trainee, exchanged 'OK' and 'Up' signals and they made a normal ascent and surfaced with a dive duration of 44 min. Back aboard the boat the instructor confirmed that he had surfaced with an empty cylinder as he had thought it unnecessary to change it after the morning dive expecting he would have enough air for the second dive.

## Equipment

February 2018

18/043

A diver and his buddy on a dive trip abroad carried out a morning boat dive to a maximum depth of 45m with a dive duration of 48 min and carried out a 3 min safety stop at 6m. After a surface interval of 2 hours 13 min they carried out a second boat dive, the diver using nitrox 33 and the buddy nitrox 32, on a wreck and reached a maximum depth of 32m. The diver's computer was set to nitrox 33 and the buddy's primary and backup computers were set to air. The divers encountered no issues during the dive and at 27 min they deployed a DSMB and began their ascent. At 12m the buddy signalled to the diver that his primary computer indicated 16 min of decompression stops but his backup computer showed 27 min. The divers ascended to 5m to conduct their stops and the diver deployed a yellow DSMB up his DSMB line to signal a request for gas to the boat. A drop cylinder of air was deployed by the surface cover which the divers used during their decompression stop. The diver's computer, set to nitrox 33, cleared after approximately 2 min but both divers completed the 25 min of stops required by the buddy's computer. They ascended to the surface with a dive duration of 73 min and were recovered by their dive boat. Subsequent analysis of the buddy's backup computer showed anomalies from dives recorded in its dive log, an example of which was a 14m dive previously carried out that the computer had logged as a 50m dive. The faulty computer was quarantined and both divers given a 24 hour break from diving.

May 2018

18/095

A trainee was carrying out his first open water dive by a harbour jetty. At 6m the trainee indicated to his instructor that his BCD inflator button unit had separated from the direct feed. The instructor took the student to the surface, the dive manager repaired the inflator and the instructor and trainee carried on with their dive. They surfaced with a dive duration of 45 min to a maximum depth of 6m.

July 2018

18/120

An instructor using air carried out a shore dive and at 6m experienced a free flow on his primary regulator which had been serviced two weeks earlier. The training dive was aborted and he surfaced with a dive duration of 9 min to a maximum depth of 6m. The fault was found to be a damaged internal hose 'O' ring.

September 2018

18/180

A diver was on holiday and carried out two boat dives a day for seven days. He was using his own regulators which had been serviced six months previously. On the eighth day he carried out a dive but at 10m started to experience a strange taste from his primary regulator and could not get much air from it although he still had 90 bar on his gauge. He stayed calm and changed to his octopus regulator which also gave him little air so he took his buddy's alternate source regulator and they ascended to the surface. Their dive duration was 44 min including a 3 min safety stop and to a maximum depth of 20m. When the diver was back aboard the boat he raised the issue but got very little response from the other divers who could speak English other than offers to use their regulators for the second dive. The diver declined and examined his regulators but there was nothing visible to indicate a problem so he gave them a good wash in clean fresh water and solution to see if this would dislodge any debris they might have picked up. The diver decided to carry out the second and last dive of his holiday but briefed his buddy to stay close to him. His regulators were better than before but he still had the strange taste with breathing from them a little impaired. On his return home he took the regulators to his service engineer for inspection and when he dismantled the first stage he struggled to remove the filter but when he did find it was blocked solid with what looked like aluminium powder. The diver tried to contact the dive company he had used without success to alert them to the possible problem of other contaminated aluminium cylinders.

## Injury

February 2018

18/041

An instructor, trainee and third diver carried out a wreck dive all using nitrox 32. They descended to 7m where the third diver was unable to clear his ears. The group ascended and surfaced with a dive duration of 7 min. The diver who had the ear problem was taken ashore under supervision and the instructor and trainee continued their dive. The diver was taken to a clinic, prescribed medication and advised not to dive for five days.

February 2018

18/042

A group of divers surfaced during a shore dive. They had a dive duration of 13 min to a maximum depth of 26m when an incident had occurred involving panic and a buoyant ascent. They were 100m away from the exit point and one of the group called for help. Two divers from another group on the shore responded, swam out and towed a diver from the group that had surfaced to the exit point and then assisted her ashore. The rescued diver vomited numerous times whilst being towed and when she was back on land. She was given oxygen and a full casualty assessment carried out. The emergency services were called and an ambulance arrived. The diver had become more responsive whilst waiting for the ambulance but was evacuated by stretcher to the ambulance and taken to hospital. The diver who had initiated the rescue by calling for help, contacted the two divers who had carried out the rescue to inform them of the diver's condition and to thank them for their help.

February 2018

18/051

An instructor and two trainees carried out a shore dive. They kitted up, completed checks, entered the water and

swam about 30m to the end of a bay. They paused to get their breath back and then descended to 6m. They had a short underwater swim of around 15m to an area where they practised skills including mask clearing and all went well. The next skill was AS ascent which was completed at the correct pace. On the surface, with a dive duration of 15 min to a maximum depth of 7m, one of the trainees started coughing hard, went extremely red in the face and was showing signs of panic. After a short time, the trainee calmed down and regained reasonable breathing control. The instructor towed him to the shore, during which the trainee was still coughing, and then assisted him out of the water where the trainee looked totally exhausted. The instructor informed the student that he could not continue with the training. A number of days later the trainee mentioned for the first time that he had inhaled water on the dive but was now fine.

**March 2018**

**18/047**

An instructor and his student, both using air, carried out a boat dive and descended to 36m. The aim of the dive was depth progression but not to exceed 40m. During the descent the student's breathing rate was normal. After completing a full set of checks the instructor moved off but as the student followed his breathing rate increased and it appeared to become harder for him to breathe. At this point the student became more anxious, indicated to the instructor that he was not happy and that they should ascend. His breathing rate continued to increase and as the ascent began the student was initially unable to control his extremely accelerated breathing rate. The pair ascended with the instructor holding onto the student and helped to maintain his buoyancy by dumping air from his BCD until they reached the safety stop at 6m. The student had fully opened his regulator adjustment valve at 30m and during the ascent he had felt re-assured with his improved breathing rate and indicated he was happy to carry out the full 3 min safety stop. The pair surfaced with a dive duration of 14 min to a maximum depth of 38m. Back aboard the boat the diver, who was visibly shaken and pale, was put on oxygen for the journey back to shore. The diver attended a hyperbaric chamber where he was given a full neurological check and put on oxygen. The instructor gave details of the dive profile backed up by his computer's profile. The chamber's staff felt that the student had experienced an anxiety attack which may have been brought on by nitrogen narcosis. The diver was advised not to dive for 24 hours.

**April 2018**

**18/067**

A diver was on a hardboat diving holiday. His first dive of the second day had been to a maximum depth of 27m with a dive duration of 44 min and, after a surface interval of 3 hours 24 min, he carried out a second dive using nitrox 32 reaching a maximum depth of 24m, a 3 min stop at 6m and surfaced with a dive duration of 64 min. The diver exited the water using the hardboat's large stern ladder. Having climbed to the top, his left foot and fin were on the uppermost left rung and his right foot on the deck. A deckhand was removing his right fin when his left foot slipped off the rung, his left leg slipped and was wedged between the top rung and the boat's stern. The diver lost his grip with both hands and he fell vertically downwards in full kit and his crotch impacted on the ladder's crossbar pivot. The diver recovered and the experience has not put him off diving in the future.

**May 2018**

**18/062**

Two divers and an instructor carried out a training shore dive but on the descent to 10m one of the divers felt pain and pressure in his ear. He paused his descent to try and equalise then tried to continue the descent when his ear 'popped' at 6m and the pain abruptly stopped. The diver carried on with the dive reaching a maximum depth of 11m with a dive duration of 48 min. Back on the surface the ear pain began again and as he exited the water he spat out some blood. The diver did not dive again that day and saw a doctor the following morning. The doctor checked the diver's eardrums but on checking his sinuses found they were inflamed and damaged. The doctor said that instead of his eardrums perforating, the pressure had been released into his sinuses. The diver was prescribed a nasal spray, took three days off diving and was cautious on his first dive back but had no further problems.

**May 2018**

**18/063**

A diver on holiday had carried out a shore dive reaching a maximum depth of 20m with a dive duration of 43 min. As she made her way out of the water the waves pushed her into rocks just after she had removed her fins. Exiting the water, the diver felt a pain in her toe and on examination saw it was swollen. She left it for a while to see if the swelling would go down but it did not. Her dive manager sent her to hospital and the result of an x-ray showed a hairline fracture. The diver was advised not to dive until she felt better and off the pain killers.

**May 2018**

**18/088**

Whilst carrying out a boat dive as part of a group, a diver experienced a 'noise' sensation, rush of cold water, dizziness and pain in his right ear at 13m. Because of the dizziness the diver surfaced immediately, omitting a safety stop, with a dive duration of 10 min to a maximum depth of 15m. The pain and dizziness lasted for approximately 20 min and the diver later attended hospital.

**May 2018**

**18/096**

A trainee carried out a shore dive and indicated to his instructor that he had a problem with his ears. He surfaced with a dive duration of 9 min to a maximum depth of 5m. The trainee was sent to a medical centre and advised not to dive for seven days.

**June 2018**

**18/138**

A diver was on the final day of a week's hardboat diving trip. He had carried out two dives a day and on the last day had carried out his thirteenth dive to a maximum depth of 18m buddied with two other divers. After a 2hr 30 min surface interval they carried out his fourteenth dive on a wreck. The diver, using air, felt slightly apprehensive on the descent which he put down to deeper diving and poor visibility as he descended the shotline but once he was on the wreck he felt better as the visibility was much improved. The three divers stayed together and when they went into decompression they all ascended slowly to 6m and, as mandatory decompression had cleared, they carried out a 4 min safety stop at 6m and surfaced with a dive duration of 27 min to a maximum depth of 32m. Back aboard the boat the diver started to feel strange and had irritating pains across both shoulders and a pain in his left elbow. He reported this to another diver and then his right leg felt noticeably hotter than his left which he also mentioned to the diver. The skipper was informed and the



diver, now feeling lightheaded, was put on oxygen, laid flat on the deck with water and his drysuit removed. He was advised to stay on the oxygen for the journey back to port and kept warm with jackets and a woollen hat. The diver had taken sea sickness tablets and had helped move cylinders and kit prior to boarding the boat that day which he felt may have caused his fatigue. The diver's pains gradually subsided over a day or two and the hot feeling in his leg did not get worse.

**July 2018**

**18/123**

A diver and his buddy carried out a dive and as he descended the shotline he had ear problems at 4m. Unable to clear his ears he surfaced with a dive duration of 3 min to a maximum depth of 4m. He reported to a medical centre and was told to return the following morning if he was still unable to clear his ears. The diver returned the following morning, was given antibiotic medication and told not to dive for the next two days.

**September 2018**

**18/156**

Two pairs of divers were about to carry out a morning training dive from a RHIB. The pairs were sitting either side of the RHIB as the cox'n positioned it by a shotline and counted them down for their entry using a backward roll. One pair and one of the other pair entered at the same time but the remaining diver delayed his entry, collided with his buddy and hit him on the head with his cylinder. The buddy was stunned and he and the diver were recovered back aboard the RHIB. The buddy saw a doctor who said he could return to diving that day if he wanted but the diver decided to miss the afternoon dive.

**September 2018**

**18/157**

A trainee reported that he had a sore left ear and attended a medical centre. He had carried out two dives the day before, one to a maximum depth of 17m with a dive duration of 25 min and a night dive to a maximum depth of 15m. The doctor advised the trainee not to dive for 48 hours to allow his ear drum to recover.

**September 2018**

**18/176**

A diver on a training course was trying to complete skills for his qualification. During a RHIB dive with an instructor, fellow student and safety diver and at a depth of 10m the diver was unable to clear his mask due to sinus problems. The diver made a rapid ascent to the surface with a dive duration of 9 min to a maximum depth of 15m. The surface cover noticed he had blood around his face and he was recovered aboard the RHIB. The diver was unable to complete the course due to the sinus problems.

**September 2018**

**18/161**

A trainee carried out a shore dive and experienced ear and sinus pain at 5m. The dive was aborted and the trainee surfaced with a dive duration of 12 min to a maximum depth of 5m. He was seen by medical staff and informed that he could dive the following day if he felt well enough.

**October 2018**

**19/005**

Towards the end of an overseas training course a student had carried out a boat dive to a maximum depth of 16m, completed a 3 min safety stop at 6m and surfaced with a dive duration of 40 min. After a surface interval of 2 hours

23 min the student, her student buddy and an instructor, all using air, carried out the second dive. The aim of the dive was recreational and to then practise alternate source ascents at the end of the dive. The recreational part of the dive and the first alternate source ascent were carried out with no problems but as they re-descended to carry out the second ascent the student indicated a problem with her ears. The instructor indicated to ascend slowly but this did not alleviate the problem so the group ascended together and surfaced with a dive duration of 41 min to a maximum depth of 9m. Back aboard the dive boat the student reported she had a sharp excruciating pain in her right ear and a headache but no other symptoms. The boat returned to shore and the student was taken to a medical centre where a doctor diagnosed an infection in her right ear, prescribed an anti-inflammatory and a course of antibiotics. The student was asked to report back to the centre the following day and to get the 'all clear' to fly home three days later.

**October 2018**

**19/136**

Three divers carried out a boat dive. The aim of the dive was a build-up dive using a rebreather for one of the divers who had previously been diagnosed with immersion pulmonary oedema. His two buddies on this dive were the same as when he had suffered IPO on a dive using a rebreather a year earlier. The diver had stopped diving for a month or two and then carried out open circuit dives to around 8m, then progressed gradually to 20m or 30m. He had carried out two shallow dives on his rebreather to around 10m and this dive was his first deeper dive using it. The two buddies, using open circuit air, and the rebreather diver descended a shotline to a wreck and the buddies kept a careful watch on the diver. There were no signs of any problems until around 21 min into the dive. One of the buddies had headed off to look at the bow leaving the second buddy and diver further back. On his return the buddy saw they were off and to the side of the wreck at 24m with the buddy pulling out her DSMB. She later reported that she thought the diver had become cold, wanted to ascend and they were unsure of the shot location. As the buddy approached the pair he realised that the diver was on his bailout, immediately assumed there must be a problem and started to ascend with the diver leaving the other buddy to sort out her DSMB. She appeared not to be aware of the problem and seemed in no rush but had sufficient redundancy and experience of solo diving. The buddy and diver ascended fairly swiftly to 15m, the buddy deployed a DSMB and they made a slow controlled ascent, frequently exchanging 'OK' signals. At 6m the diver was anxious and signalled 'I am out of here' and made a rapid ascent. He surfaced with a dive duration of around 29 min to a maximum depth of 24m. The buddy kept watch on him from below whilst ascending more slowly and watched to ensure the other buddy was safely on her way up. Visibility and conditions were good so the buddy assumed the boat cover would see the diver with no trouble. When the buddy surfaced the boat had recovered the rebreather diver and put him on oxygen. The second buddy surfaced 2 min later and they were both recovered aboard. Medical advice was sought and an ambulance dispatched to meet the boat at a slip. The rebreather diver was kept on oxygen during the passage despite his protestations that he was 'OK now'. The ambulance arrived at the slip shortly after the boat, took the diver's history, put him on oxygen and took him to hospital. The hospital kept the diver in overnight for observation. He showed no further signs of oedema and was released the following morning. The diver later reported being unsure when he reached the surface that

he would survive long enough to make it onto the boat. He made a full recovery but was advised not to dive again and to avoid being in water.

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*November 2018*

*19/039*

A group of divers were on a charter boat diving holiday. They were diving around two small islands and had carried out two dives that day, the last of which had been a dive to a maximum depth of 35m with a dive duration of 63 min. After a surface interval of 2 hours 30 min they carried out a third dive but instead of exploring the islands' reefs again one diver and his two buddies decided to hang around under the boat and see if any sharks were passing by. The diver, using nitrox 32, stayed between 6 to 8m under the boat's bow with his two buddies slightly below and a small distance away but all were using the anchor line as a reference. A female Oceanic White Tip shark, around 2.5 to 2.8m, came into view and headed towards the two buddies. She came a little too close for comfort and the buddies pushed her away. The shark circled and headed upwards towards the diver. The diver thought the shark was going to bump him and twisted to the right to avoid this but the shark opened her mouth, bit him on the top of his left thigh, thrashed a little and then let go. The diver realised he was injured, bleeding and was desperate to be back on the boat. He left his buddies, ascended the anchor line and swam the length of the boat to the stern keeping close to the hull. He exited the water via the boat's ladder and told the dive guide he had been bitten by a shark. After a moment of disbelief, and with the diver's blood dripping on the deck, the dive guide helped the diver de-kit and first aid was administered. The boat returned to port and the diver was taken to hospital, his wound stitched and he remained there for two days under observation. The dive boat had continued its itinerary but when it returned to port at the end of the week's charter the diver and others who had been aboard were interviewed by the tourist police. As a result of this incident and three others that had occurred in the previous month, the sites around the islands were closed to dive boats.

## History of Previous UK Diving Fatalities

Year	Membership	BSAC	Non-BSAC	Year	Membership	BSAC	Non-BSAC
1965	6,813	3	-	1998	46,712	5	14
1966	7,979	1	4	1999	46,682	9	9*
1967	8,350	1	6	2000	41,692	7	10
1968	9,241	2	1	2001	41,272	10	14
1969	11,299	2	8	2002	39,960	3	7
1970	13,721	4	4	2003	38,340	6	9
1971	14,898	0	4	2004	37,153	4	18
1972	17,041	10	31	2005	37,185	5	11
1973	19,332	9	20	2006	35,422	4	11
1974	22,150	3	11	2007	34,857	8	5
1975	23,204	2	-	2008	34,325	6	5
1976	25,310	4	-	2009	32,790	8	9
1977	25,342	3	-	2010	32,229	7	7
1978	27,510	8	4	2011	30,909	5	7
1979	30,579	5	8	2012	29,632	9	7
1980	24,900	6	7	2013	28,728	5	9
1981	27,834	5	7	2014	28,375	5	11
1982	29,590	6	3	2015	27,803	3	5
1983	32,177	7	2	2016	27,346	5	7
1984	32,950	8	5	2017	26,774	2	13
1985	34,861	8	6	2018	26,717	8	9
1986	34,210	6	9				
1987	34,500	6	2				
1988	32,960	10	6				
1989	34,422	4	8				
1990	36,434	3	6				
1991	43,475	8	9				
1992	45,626	9	8				
1993	50,722	3	6				
1994	50,505	6	6				
1995	52,364	9	9				
1996	48,920	7	9				
1997	48,412	4	12				

\*1999 figure corrected from 9 to 8 due to a double count discovered in 2010

1998 figures onwards are calendar year figures; 1965 to 1998 are October 1<sup>st</sup> to September 31<sup>st</sup> figures.

## List of abbreviations used in this and previous incident reports

AIS	Automatic identification system (location beacon)
AS	Alternative source (gas or air)
A&E	Accident and emergency department
AED	Automated external defibrillator
ARCC(K)	Aeronautical rescue coordination centre (Kinloss)
ARI	Aberdeen Royal Infirmary (Scotland, UK)
AWLB	All weather lifeboat
BCD	Buoyancy compensation device
BOV	Bailout valve
CAGE	Cerebral arterial gas embolism
CG	Coastguard
CCR	Closed circuit rebreather
CNS	Central nervous system
CPR	Cardiopulmonary resuscitation
CRT	Coastguard rescue team
DCI	Decompression illness
DDMO	Duty diving medical officer
DDRC	Diving Diseases Research Centre (Plymouth, UK)
DSC	Digital selective calling (emergency radio signal)
DSMB	Delayed surface marker buoy
DPV	Diver propulsion vehicle
ECG	Electrocardiogram
ENT	Ear, nose and throat
EPIRB	Emergency position indicating radio beacon
FAWGI	False alarm with good intent
FRS	Fire and rescue service
GP	General Practitioner (doctor)
GPS	Global positioning system
Helo	Helicopter
HEMS	Helicopter emergency medical service
HLS	Helicopter landing site
HSE	Health and Safety Executive
HUD	Head up display
ILB	Inshore lifeboat
INM	Institute of Naval Medicine
IPO	Immersion pulmonary oedema
IV	Intravenous
kg	Kilogramme
LB	Lifeboat
MCA	Maritime & Coastguard Agency
m	Metre
min	Minute(s)
MOD	Maximum operating depth
MOP	Member of the public
MRCC	Maritime rescue coordination centre
MRSC	Maritime rescue sub centre
MV	Motor vessel
NCI	National Coastwatch Institute
PFO	Patent foramen ovale
PLB	Personal locator beacon
POB	Persons on board
QAH	Queen Alexandra Hospital (Portsmouth, UK)
QAB	Queen Anne Battery (Plymouth, UK)
RAF	Royal Air Force
RHIB	Rigid hull inflatable boat
RMB	Royal Marines base
RN	Royal Navy
RNLI	Royal National Lifeboat Institution
ROV	Remotely operated vehicle
SAR	Search and rescue
SARIS/SARSYS	Search and rescue information system
SMB	Surface marker buoy
SRR	Search and rescue region
SRU	Search and rescue unit
UK SDMC	UK Sports Diving Medical Committee
UTC	Coordinated universal time
VLB	Volunteer life brigade
999	UK emergency phone number